

Heindel and Noyes

P.O. Box 64709 Burlington, Vermont 05406-4709

- Consulting Hydrogeologists
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FEB 23 10 56 AM '98

WASTE MANAGEMENT
DIVISION

February 19, 1998

Mr. Michael Young
Sites Management Section
Agency of Natural Resources
West Office Building
103 South Main Street
Waterbury, VT 05671-0404

Re: Sweet & Burt, Morrisville
(Site #91-1121)

Dear Mike:

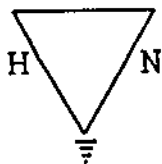
Please find enclosed our *Additional Site Characterization Report* for the above-referenced site. If you have any questions regarding this submittal or any other project matter, please feel free to contact either Jeff Noyes or myself.

Sincerely,

Eric J. Swiech
Hydrogeologist

Enclosure

cc: Tony Thompson
Catherine Kronk, Esq.



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SWEET AND BURT BULK STORAGE FACILITY

Morrisville, Vermont

ADDITIONAL SITE CHARACTERIZATION REPORT

Prepared by:

Heindel and Noyes

Prepared for:

Mr. Anthony Thompson

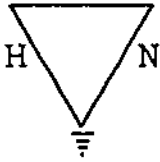
February 19, 1998

SWEET AND BURT BULK STORAGE FACILITY Morrisville, Vermont

ADDITIONAL SITE CHARACTERIZATION REPORT

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ADDITIONAL SITE CHARACTERIZATION REPORT

February 19, 1998

1.0 INTRODUCTION

This report documents additional environmental testing conducted by Heindel and Noyes (H&N) at the Sweet and Burt bulk storage facility (site), located in Morrisville, Vermont (site #91-1121) (Appendix 1, page 1). The Sites Management Section (SMS) requested this work, along with a Phase I Environmental Site Assessment, after ground water contamination, which exceeded the Chapter 12 Vermont Ground Water Standards, was identified during a Phase II Environmental Site Assessment of the property by GZA GeoEnvironmental, Inc. (GZA).¹ The Phase I Environmental Site Assessment was completed by H&N and submitted to the SMS on May 28, 1997.² The recent activities documented in this report were conducted by H&N in accordance a work plan approved by the SMS.

The purpose of this investigation was to complete the characterization of petroleum

¹GZA GeoEnvironmental, Inc., Phase II Environmental Site Evaluation Report, Sweet & Burt/Morrisville Bulk Plant, 1/8/97.

²Heindel and Noyes, Inc. (#3923), Phase I Environmental Site Assessment, 5/28/97.

hydrocarbon contamination which was reported in GZA's *Phase II Environmental Site Evaluation Report*. Due to the presence of contaminated soils immediately above the shallow bedrock at the site, the SMS required that the investigation include testing of the bedrock aquifer. To achieve the objectives of the investigation, H&N conducted a fracture trace analysis, performed test pit excavations, installed four offsite overburden monitoring wells and one shallow bedrock monitoring well, and conducted ground water sampling of the existing and newly installed wells. The results of the fracture trace analysis were previously submitted to the SMS in an October 16, 1997 letter.

This report summarizes the results of the investigation. Accordingly, this report documents field activities, presents field and laboratory analytical results, and makes conclusions and recommendations based on all data obtained at the site to date.

2.0 PREVIOUS INVESTIGATIONS

On August 29, 1991, Wehran Engineering Corporation supervised the removal of a 1,000-gallon diesel underground storage tank (UST) at the Sweet and Burt bulk storage facility. During removal activities, elevated concentrations of volatile organic compounds were detected in soils from the base of the tank excavation. To better characterize the nature and extent of this contamination, H&N conducted a preliminary site assessment in November 1991³, and performed a supplemental investigation at the site in July 1992.⁴ A total of eight monitoring wells were installed during these investigations.

These investigations concluded that the subsurface contamination onsite was principally a result of petroleum product surface releases, and that the primary contaminant was gasoline. It was determined that the petroleum contamination found in the down gradient monitoring wells likely originated from leaking plumbing appurtenances on the since-removed gasoline above ground storage tank (AST) #103 (Appendix 1, page 2). During these investigations, Sweet and Burt was denied access to the adjoining northern property, thereby preventing evaluation of subsurface conditions beyond the perimeter of the bulk plant facility.

³Heindel and Noyes, Inc. (#2629), UST Site Assessment, 2/4/92.

⁴Heindel and Noyes, Inc. (#3109), Supplementary Tank Site Investigation, 9/21/92.

Based on the results of the *Supplementary Tank Site Investigation*, which included the discovery of free-product in monitoring well WQ-4, H&N recommended manual product-recovery operations, and quarterly ground water quality monitoring at the site. H&N does not have any record of additional environmental activities occurring on site until GZA's investigation in December 1996, which was prompted by a real estate transaction.

3.0 WORK COMPLETED

3.1 Test Pit Excavations

On November 20, 1997, four test pit excavations were conducted by Craig Cowles Excavating (Richmond, Vermont) to expose bedrock at various locations beneath the site to identify potential fracture zones which could aide in the placement of a bedrock monitoring well (Appendix 1, page 2). Bedrock was encountered in the excavations between 4 and 16 feet below ground surface (bgs). The overlying soils were descriptively logged by H&N personnel, and screened in the field with a photoionization detector (PID). Test pit logs are included in Appendix 3, page 1. Visual inspection of the exposed bedrock did not identify any pronounced zones of weakness.

3.2 Overburden Monitoring Well Installation

On November 24, 1997, four soil borings were advanced until refusal on bedrock, which was encountered at depths ranging from 14.3' - 27.0' bgs. Borings were subsequently configured as monitoring wells to evaluate the hydrogeologic conditions and ground water quality of the shallow, unconfined aquifer. Soil borings were advanced using hollow-stem augers (with split spoon sampling), by Tri-State Drilling and Boring, Inc., (West Burke, Vermont) under the supervision of H&N personnel. The boring program targeted offsite, down gradient locations, immediately north of the facility (Appendix 1, page 2).

Split-spoon samples were collected at five foot intervals in each of the borings. Samples were descriptively logged and screened for volatile organic compounds (see Section 3.2). H&N's soil boring logs and Tri-State Drilling and Boring's drilling logs are included in Appendix 3, pages 2-13.

Water table monitoring wells were constructed of two-inch (i.d.) PVC casing with flush-threaded joints and factory-slotted, ten foot screened sections (0.010 inch). Screened sections were covered with filter sock and packed with either filter sand or drill cuttings. All monitoring wells were finished with a bentonite surface seal and flush-mounted curb boxes. Monitoring well construction diagrams are included on the soil boring logs in Appendix 3, pages 2-13.

3.3 Bedrock Monitoring Well Installation

The bedrock monitoring well is located approximately 5 feet down gradient of the northern property line. The installation commenced on December 2, 1997. Hollow-stem augers (6 3/4 inch i.d.) were used to bore through the overburden until bedrock was encountered at 16.5 feet bgs. With the augers in place, a 5 1/2 inch air-rotary hammer was driven approximately 3.5 feet into bedrock to approximately 20 feet bgs. A 4 inch diameter galvanized-steel casing was set at the bottom of the boring, tremie grouted in place, and allowed to set for approximately 21 hours to provide an adequate seal from the contaminated, overlying unconfined aquifer. The annulus above the grout was backfilled with drill cuttings and the well was finished with a bentonite surface seal.

Bedrock coring, using a 3 inch diameter diamond drill bit and a 5 foot core barrel, was conducted down the center of the casing to a maximum depth of 30 feet bgs. The resulting bedrock cores were descriptively logged by H&N personnel, and are discussed in greater detail in Section 4.1. Monitoring well construction details are included on the boring log in Appendix 3, page 6.

3.4 Soil Screening

During the soil boring program, split-spoon soil samples, collected at 5 foot intervals, were screened with an HNu Systems, Inc. Model PI 101 POID equipped with a 10.2 eV lamp. The PID was calibrated with a 100 ppm isobutylene span gas prior to screening. Headspace screening results are included on soil boring logs in Appendix 3, pages 2-13.

No soil samples were collected for laboratory testing.

3.5 Ground Water Sampling

Three newly installed overburden monitoring wells (WQ-6, WQ-7, and WQ-8) were developed on December 2, 1997, and sampled the following day along with existing monitoring wells WQ-1, WQ-3, and GZM-1. Monitoring wells GZM-2, GZM-3, and GZM-4, sampled by GZA during their Phase II Investigation, could not be sampled due to insufficient yield, and newly installed monitoring well WQ-5 was completely dry at the time of sampling. Previously installed monitoring wells WQ-2 and WQ-4 could not be located during the December 1997 field work, due to thick ice and snow cover. Later this spring, we will confirm the presence/absence of these sampling points.

On December 19, 1997, the bedrock monitoring well was developed and sampled. The same day, water quality samples were collected from two ground water seeps, one located approximately 100 feet to the west, and the other approximately 200 feet to the north of the site along the steep bank adjacent to Lake Lamoille (Appendix 1, page 2). H&N personnel could not inspect the bottom of the bank for evidence of contaminant impact (stressed vegetation, staining, etc.) due to snow/ice cover.

All ground water samples were preserved appropriately and submitted to Endyne, Inc., located in Williston, Vermont, for analytical testing via EPA Methods 8020 and 8100, for purgeable aromatics and polyaromatic hydrocarbons (PAHs), respectively. A trip blank accompanied the samples during the December 3, 1997 sampling event.

3.6 Monitoring Well Survey

All monitoring well locations and top-of-casing (TOC) elevations were surveyed by H&N on December 19, 1997. The survey established a temporary bench mark (TBM) on the TOC of monitoring well WQ-1, assigning it an arbitrary elevation of 100.00 feet.

Water level measurements were obtained from all accessible overburden monitoring wells on December 2, 1997. Ground water elevations were calculated by subtracting the measured water levels from the surveyed TOC elevations, and a water table elevation contour map was subsequently constructed (Appendix 1, page

3). The monitoring well elevation data are present in tabular form in Appendix 2, page 1. A discussion of the ground water elevation data is presented in the following section.

4.0 INVESTIGATION RESULTS AND DISCUSSION

4.1 Stratigraphy/Hydrogeology

In general, soils beneath the site consist of coarse-fine sand and gravel, interpreted as fill material, overlying native and reworked glacial till. The glacial till mantles carbonaceous schist (bedrock) of the Hazens Notch Formation. Bedrock outcrops in the southern portion of the facility and dips from 2-10% across the site to form a narrow north-northwest trending bedrock trough, the axis of which runs directly below the bulk storage tanks (see the bedrock contour map, Appendix 1 pages 4). The base of the trough extends to a depth of approximately 19 feet bgs near the northern property boundary where it is partially truncated by a localized bedrock high (based on data from TP97-2), forming a shallow elongated bowl behind it. Beyond this truncation, along the axis of the trough, bedrock elevations continue to decrease to 27 feet bgs. Cross-sectional interpretations are provided in Appendix 1, page 5, and surficial and bedrock geology maps and legends are included in Appendix 1, pages 6-9.

Situated on a local topographic high, the site is likely located in a ground water recharge zone. The December 2, 1997 water table elevation contour map indicates that shallow ground water flow at the site is to the north-northwest towards Lake Lamoille (Appendix 1, page 3). Shallow ground water flow is largely controlled by the attitude of the underlying bedrock. Conceptually, precipitation infiltrates the thin soil column beneath the site until it encounters the overburden-bedrock interface, where, due to the low permeability of the bedrock, it flows along the interface under the influence of gravity towards the bedrock trough and accumulates within the elongated bowl discussed above. This is evidenced by the thick water column in monitoring well WQ-3 (7.37 feet), located within the elongated bedrock bowl, relative to wells located on the perimeter of, and down gradient in the bedrock trough, which had 0.0-1.42 feet of saturated thickness at the time of sampling. Ground water escapes from the localized bedrock depression along a relatively steep horizontal hydraulic gradient (approximately 7%), which mimics the underlying bedrock slope.

The storm sewer drain, which traverses the bedrock trough immediately north of the localized bedrock high, may act as a conduit for preferred ground water flow during the seasonal high water table as the invert elevation of the sewer (estimated between 11 and 13 feet bgs) is near the static water level observed in monitoring well WQ-3. The outlet of the storm sewer drain was dry during the December inspection, suggesting that the corridor was not transporting ground water at that time.

Two separate ground water seeps were located down gradient of the site, along the bank adjacent to Lake Lamoille. Their relationship to the unconfined aquifer on the site is uncertain at this time.

Oxidation and dissolution along calcite veins in the bedrock core shows that shallow ground water fluctuates 4 feet across the bedrock soil interface at the site. Beyond 4 feet, there was no visual evidence of rock/water interactions, and bedrock cores were highly competent, with no apparent water-bearing fractures. However, ground water often moves without evidencing iron staining (especially if it is anaerobic), and can be transmitted along hair-line fractures which are difficult to identify in hand specimen. Therefore, further testing of the bedrock monitoring well is required to establish the relationship between the overburden aquifer and the shallow bedrock.

4.2 Contaminant Distribution

The results of the December 1997 ground water analyses (EPA Methods 8020 and 8100 for purgeable aromatics and polyaromatic hydrocarbons (PAHs), respectively) are summarized in Table 2 of Appendix 2, pages 2-4. Applicable analytical results from previous site investigations by H&N and GZA are also included in this table. During the December 1997 sampling event, ground water concentrations exceeded either the 1997 Vermont Groundwater Enforcement Standard (VGES) or the VT Health Advisory (VTHA) for one or more compounds in monitoring wells WQ-3, WQ-6, WQ-7, WQ-8, and BDRK-1. Total benzene, toluene, ethylbenzene, and total xylene (BTEX) concentrations for the above wells, and individual compound concentrations which exceed regulatory standards, are bulleted below.

Monitoring well WQ-3, located within the bedrock bowl, had a total BTEX concentration of 16,250 ug/l. Benzene (1,910 ug/l), ethylbenzene (1,550 ug/l),

toluene (1,090 ug/l), total xylenes (11,700 ug/l), and naphthalene (850 ug/l) exceeded the VGES.

Monitoring well WQ-6, located on the eastern side of the bedrock trough, had a total BTEX concentration of 905.3 ug/l. Benzene (465 ug/l) and naphthalene (49.2 ug/l) exceeded the VGES.

The furthest down gradient monitoring well, WQ-7, had a total BTEX concentration of 424 ug/l. Benzene (120 ug/l) and naphthalene (268 ug/l) exceeded the VGES.

Monitoring well WQ-8, located within the bedrock trough approximately 37 feet down gradient of MW-3, had a total BTEX concentration of 771.1 ug/l. Benzene (299 ug/l) exceeded the VGES.

Bedrock monitoring well BDRK-1, installed west of the bedrock trough axis, approximately 23 feet from WQ-3, had a total BTEX concentration of 526.6 ug/l. Benzene (120 ug/l) and naphthalene (64.5 ug/l) exceeded the VGES.

No EPA method 8020 or 8100 parameters were detected in either ground water seep sample. Laboratory analytical reports are presented in Appendix 4, pages 1-20.

A total BTEX dissolved plume isopleth map is included in Appendix 1, page 10. The map indicates the bulk of the contamination is concentrated in the vicinity of monitoring well WQ-3, within the localized bedrock depression. The non-detect analytical results from the two down gradient ground water seeps suggest the horizontal extent of the plume has been reasonably delineated, assuming the seeps and the ground water onsite are hydraulically connected. However, the role of the sewer corridor in contaminant migration is not fully understood at this time, and it may provide an avenue for preferred contaminant flow towards Lake Lamoille during high water table events.

5.0 CONCLUSIONS AND RECOMMENDATIONS

H&N has completed additional environmental activities at, and adjacent to, the former Sweet and Burt Bulk Storage Facility. These activities included offsite overburden

monitoring well installation, bedrock monitoring well installation, ground water sampling of previously installed and newly installed wells, and sampling of two ground water seeps located along the bank adjacent to the site. This phase of investigation complemented test data generated from previous site investigations conducted by H&N and GZA. Based on the combined data, several conclusions have been drawn. These are as follows:

- Shallow ground water flow on the site is largely controlled by the attitude of the underlying bedrock, and has been determined to be to the north-northwest towards Lake Lamoille.
- During the December 1997 sampling event, ground water concentrations exceeded the VGES for one or more compounds in overburden monitoring wells WQ-3, WQ-6, WQ-7, and WQ-8, and bedrock monitoring well BDRK-1. The relatively high BTEX concentrations, compared to PAH concentrations, are consistent with gasoline contamination.
- The horizontal extent of the contaminant plume has been reasonably delineated. The estimated contaminant plume covers approximately 5,800 ft², and is comprised of an estimated 8.9 lbs. of BTEX mass, 90% of which is partitioned to the adsorbed phase, the remaining 10% being dissolved (does not include residual). The bulk of the contamination is concentrated in the vicinity of monitoring well WQ-3, within the localized bedrock depression, and encompasses only 850 ft² (or 15% of the total plume area), while containing an estimated 97% of the total BTEX mass.
- The bedrock aquifer is contaminated. Additional samples will be required to determine if this is an artifact of drilling or related to microfracture transport.
- Currently, there is no known risk to public health or the environment.

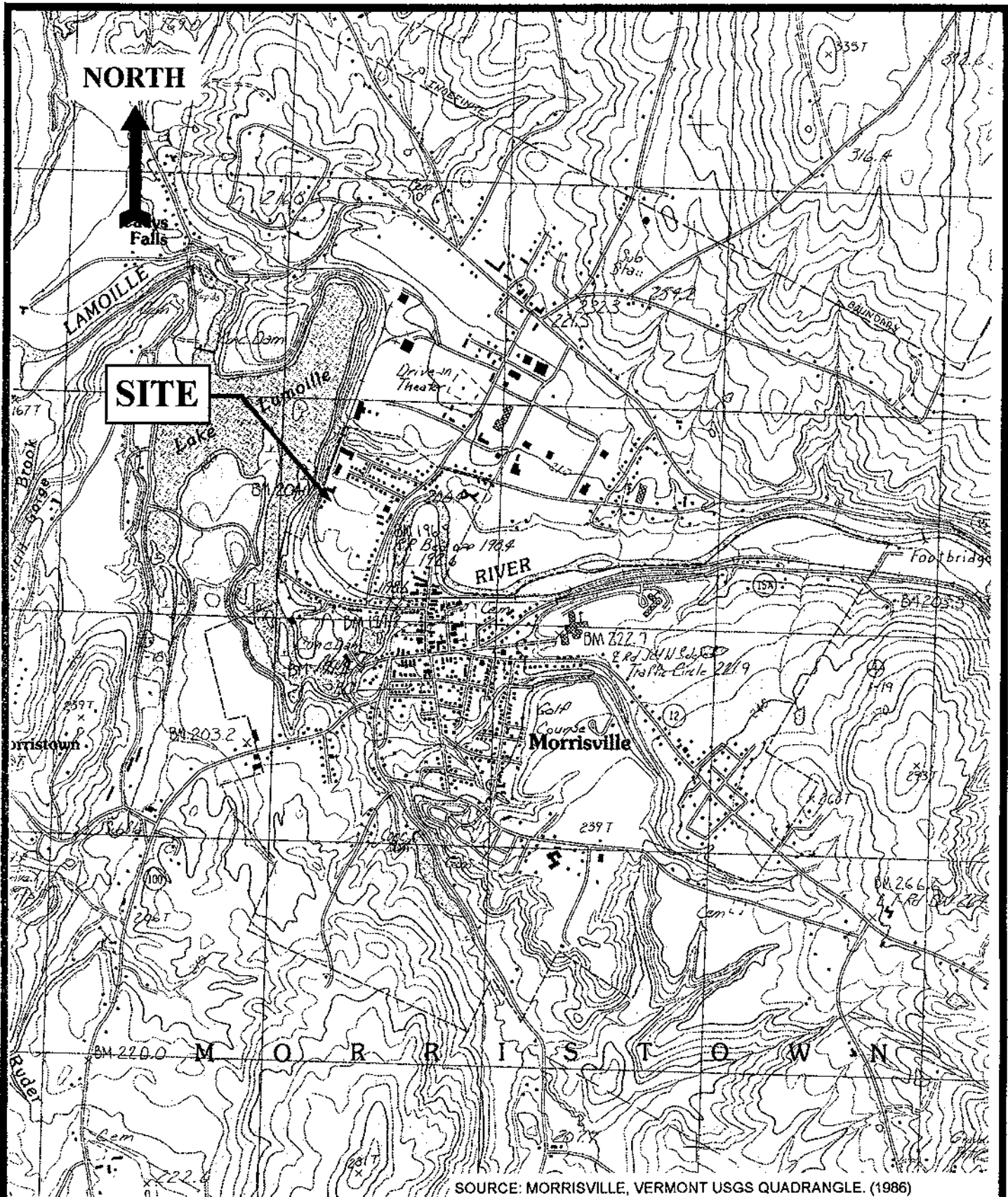
Based on the above conclusions, H&N recommends the following:

- Conduct packer testing on the bedrock monitoring well immediately to identify the water/contaminant bearing zones in the well. If no contamination is discovered in the deeper portions of the well, the well should be closed following standard well abandonment protocol to prevent potential future contamination of the deeper

aquifer. If contamination is identified at depth, an appropriate course of action will be developed based on contaminant concentrations.

- Perform a confirmatory ground water sampling round in the spring of 1998 to verify the magnitude and extent of the contaminant plume. If the sampling results confirm the conclusions drawn in this report, a corrective action plan will be proposed to remove the contaminant source area.
- The purchase and sales agreement between Mr. Tony Thompson and Ultramar stipulates removal of the site from the State's Hazardous Waste Site list due to the relatively high concentration of contaminants immediately overlying the shallow bedrock on the property. To facilitate this arrangement, H&N will recommend soils excavation of select residual "hot spots" which could act as sources for long term shallow ground water contamination, and threaten the bedrock aquifer. The excavations would be designed/engineered to remove the greatest volume of highly contaminated soil without compromising the integrity of the bulk storage facility structures. Our present understanding of contaminant distribution (97% of total BTEX mass concentrated within 15% of the plume area, with 90% of the mass adsorbed) promotes selective excavation as a viable remedial alternative.

U:\ESWIECHIS&BURT\MORRIS\IRPT.WPD



Sweet & Burt/Morrisville Bulk Plant

MORRISVILLE,

VERMONT

SITE LOCATION MAP

SCALE: 1"=2000'

FILE: C:\SWTBTMOR\SITE.MAP

DATE: DECEMBER 9, 1997

PROJECT NO. 97030

DRAWN BY: M. Luman

PROJ. MGR: E. Swiech

APPROVED: J. Noyes

Heindel and Noyes

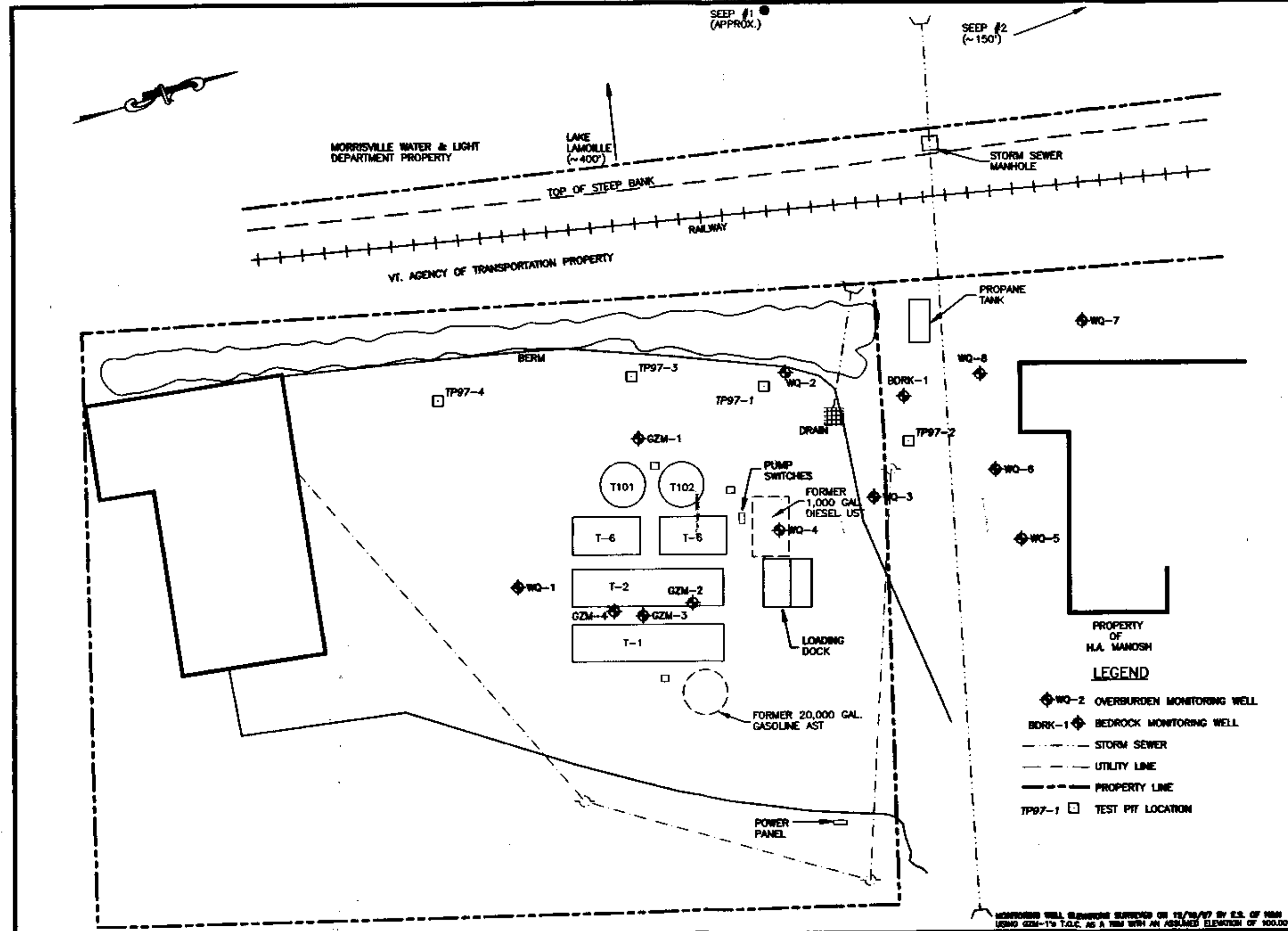


- Hydrogeology • Ecology •
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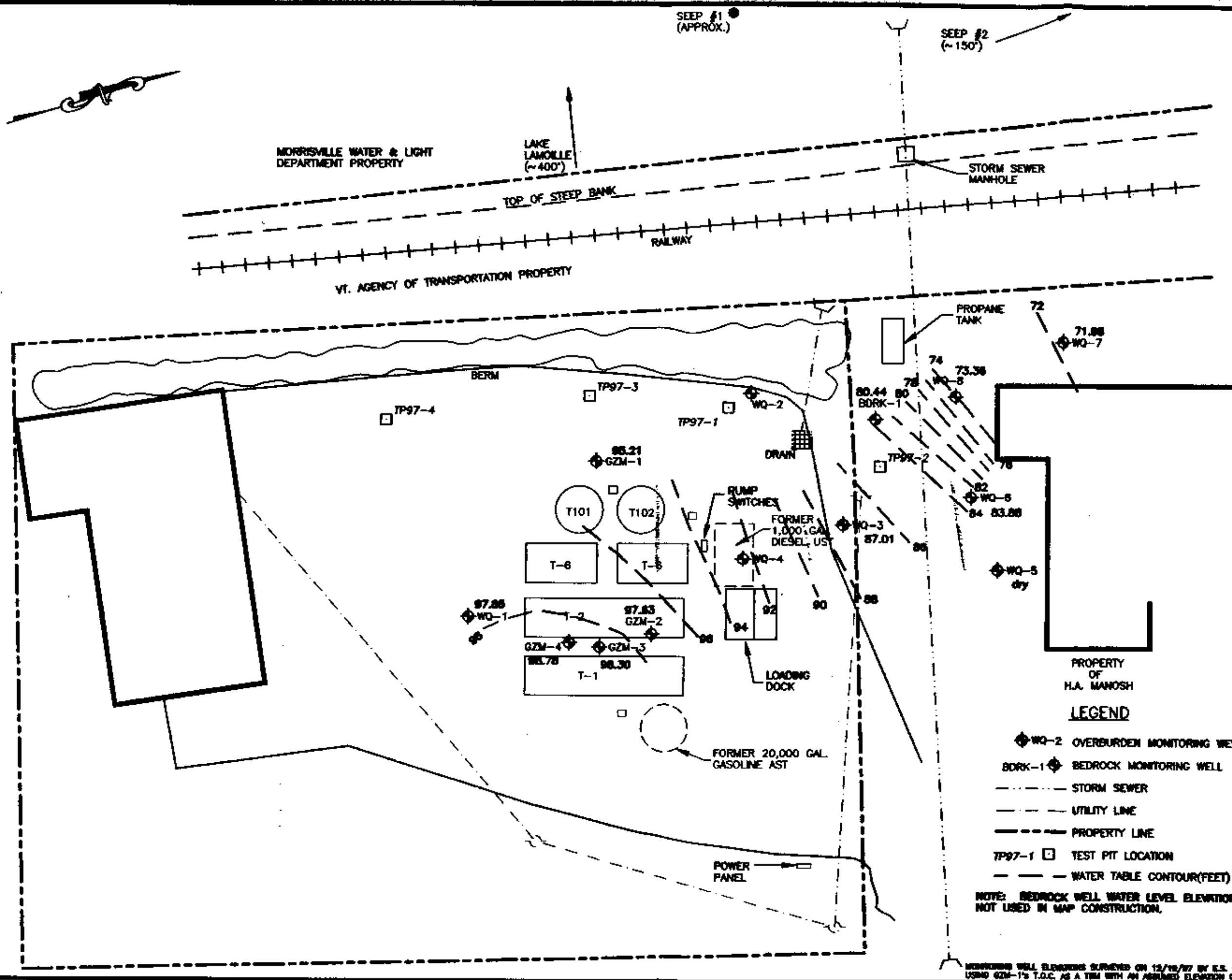
CONSULTING SCIENTISTS AND ENGINEERS

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PREPARED BY: INFORMATION & VISUALIZATION SERVICES



Heindel and Noyes • Hydrogeology • Ecology • Environmental Engineering • CONSULTING SCIENTISTS AND ENGINEERS P.O. BOX 84308 BURLINGTON, VERMONT 05408-4708 Prepared by: Investigation & Visualization Services	
DATE: JANUARY 12, 1998	PROJECT NO. 97030
DRAWN BY: M. Luman	PROJ. MGR: E. Dulach
APPROVED: J. Noyes	SCALE: 1"=20' (APPROX.)
DATE: JANUARY 12, 1998 PROJECT NO. 97030 DRAWN BY: M. Luman PROJ. MGR: E. Dulach APPROVED: J. Noyes	SCALE: 1"=20' (APPROX.) FILE: C:\SBMORRIS\SITEPLAN
SWEET & BURT/MORRISVILLE MORRISVILLE, VERMONT SITE PLAN	
PROPERTY OF H.A. MANOSH LEGEND WQ-2 OVERBURDEN MONITORING WELL BORK-1 BEDROCK MONITORING WELL --- STORM SEWER --- UTILITY LINE --- PROPERTY LINE TP97-1 TEST PIT LOCATION	



MEMPHIS WILL ELABORATE SURVEYED ON 12/18/67 BY U.S. OF PHOT
USING GIN-1's T.O.C. AS A TRM WITH AN ASSUMED ELEVATION OF 100.0

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Prepared by
Information & Visualization Services

DATE: JANUARY 12, 1998

PROJECT NO. 97030

DRAWN BY: M. Luman

PROJ. MGR: E. Swisch

APPROVED: J. Noyes

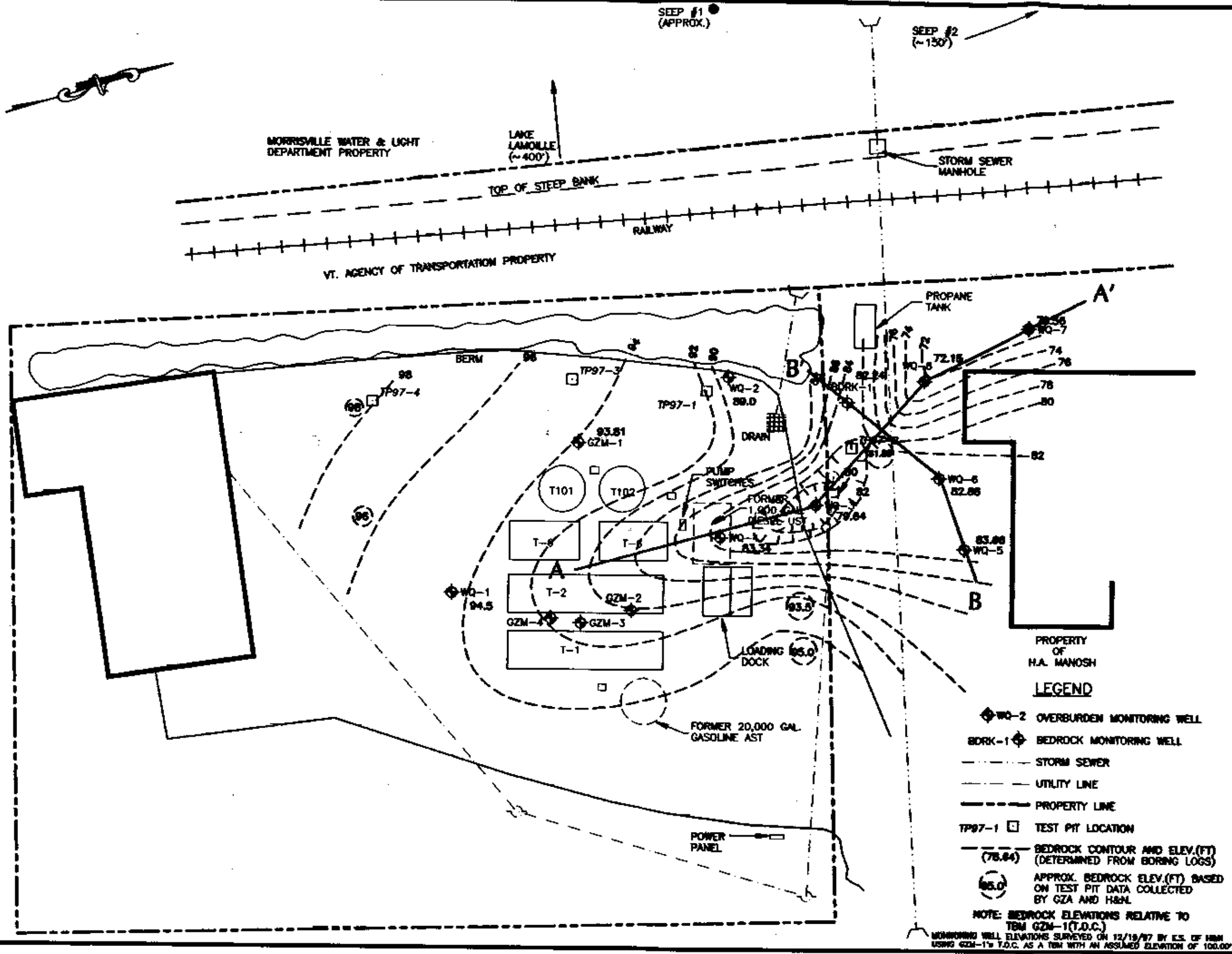
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SWEET & BURT MORRISVILLE

VERMONT

WATER TABLE CONTOUR MAP - 12/02/97

SCALE: 1"=20' (APPROX.)



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 • CONSULTING SERVICES AND SURVEYS

P.O. BOX 84709
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DATE: JANUARY 12, 1998

PROJECT NO. 97030

DRAWN BY: M. Luman

PROJ. MGR: E. Smith

APPROVED: J. Noyes

SWEET & BURT/MORRISVILLE

VERMONT

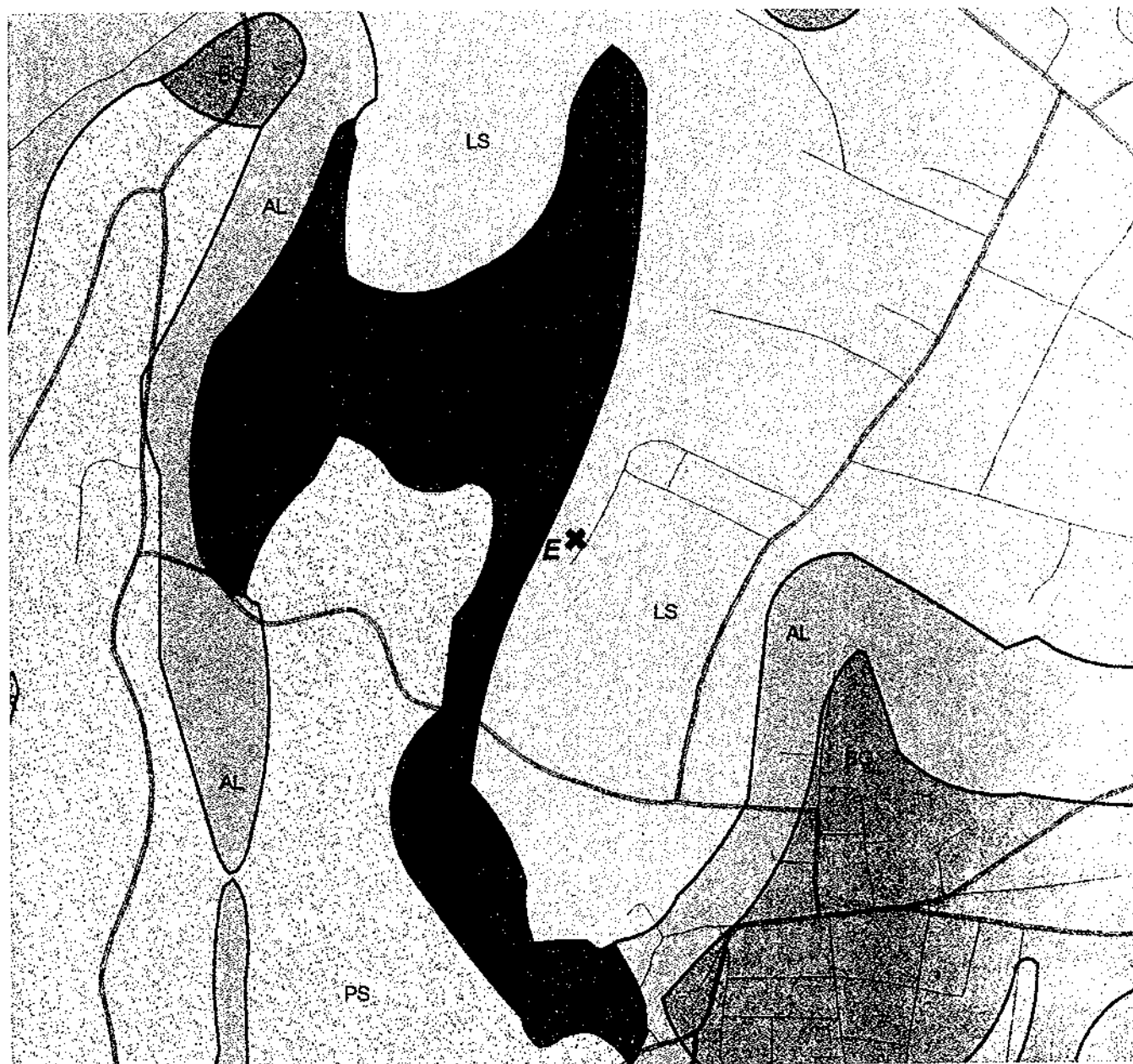
MORRISVILLE,

BEDROCK ELEVATION CONTOUR MAP

1-6

Surficial Geology Map

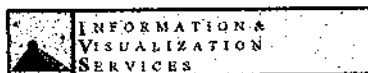
Sweet & Burt Bulk Plant Site - Morrisville, Vermont



1000 0 1000 Feet



SURFICIAL LEGEND ON FOLLOWING PAGE



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SURFICIAL GEOLOGY LEGEND

GLACIOLACUSTRINE



GLACIAL



TILL

Till mantling the bedrock and reflecting the topography of the underlying bedrock surface. Thicker in the valleys and thinner on the uplands. On many exposed uplands, postglacial erosion has left only rubble and scattered boulders on the bedrock.



MORaine

Ice marginal till accumulations with morainic topography. M- frontal moraine assumed to be recessional. TM- terminal moraine.



KAME GRAVEL

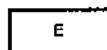
Ice contact outwash gravel. K- isolated kame. KT- kame terrace.

KM- kame moraine, kame complex with morainic topography.



OUTWASH

Horizontally bedded glaciofluvial gravel. Spillway or valley train gravel in stream valleys. May or may not have a thin veneer of postglacial alluvium.



ESKER

A sinuous ridge of constructional form, consisting of stratified accumulations of glacial sand and gravel.

EOLIAN



EOLIAN SAND AND DUNES

Deposits of sand arranged by the wind.

LITTORAL SEDIMENT PREDOMINANTLY GRAVEL

LG- horizontally bedded gravel deposited in a shoaling lake or topset beds of deltaic gravel where no foreset bedding is exposed.
BG- beach gravel.
DG- delta gravel showing foreset bedding.
D- small deltas composed of sand and gravel.



LITTORAL SEDIMENT PREDOMINANTLY SAND

LS- well sorted sand, no pebbles or boulders.
PS- pebbly sand.
BS- sand containing ice rafted boulders.
DS- delta sand.



LAKE BOTTOM SEDIMENTS

STC- silt, silty clay, and clay.
VC- varved clay.
BC- silt, silty clay, and/or clay containing ice rafted boulders.



WAVE-WASHED TILL

Till from the top of which the finer materials have been removed by wave action, leaving boulder concentrations on the surface.



BEACH RIDGE

A linear accumulation of beach material, behind the beach which was created from waves or other action.

POSTGLACIAL FLUVIAL



FLUVIAL GRAVEL

Gravel laid down by a river or a stream.



FLUVIAL SAND

Sand laid down by a river or a stream.



RECENT ALLUVIUM

Accumulations of detrital materials, which have been eroded, transported, and deposited by streams.

CHAMPLAIN SEA



MARINE BEACH GRAVEL

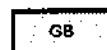


MARINE SAND

MS- marine sand without pebbles or boulders.
PSM- pebbly marine sand.



MARINE CLAY



GRAVEL BAR

A natural mound or exposed face of gravel.

PLUVIAL



SWAMP, PEAT and/or MUCK



BEDROCK EXPOSURES

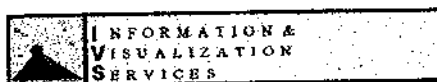
Locations with a solid filled bedrock symbol was taken directly from the state source maps.

Locations with a hatch filled bedrock symbol represents generalized centerlines of state source map bedrock symbols with a 25m buffer.

SOURCE NOTES:

Surficial Geology was digitized and scanned by Wagner, Heindel, and Noyes, into a PC ARC/INFO database from 1:62500 original State of Vermont surficial geology base maps (1966-1966). These base maps were created under the supervision of David P. Stewart (1956-1966), Paul MacClintock (1963-1966), William F. Cannon (1964), G. Gordon Connally (1965), Parker E. Calkin (1965), Robert E. Behling (1966), and William W. Shits (1966). Surficial data for most of the state is available, in 15 minute quads, from IVS at WHN, Inc. (802) 658-0820. Generalized Bedrock Outcrops were digitized from 1:62500 state surficial geology maps as linear features, which were buffered to 25m. Data available from IVS at WHN, Inc. with surficial geology coverages. Road Centerlines were generated from pre-1990 1:50000 orthophotos (or better). Road data (RDSnn) is available from the Vermont Center for Geographic Information, VCGI (802) 656-4277. Linear Surface Waters are Digital Line Graph Data, generated from 1:24,000 USGS topographic maps. This data is available from VGIS. Town Boundaries were digitized from pre-1990 1:24000 USGS topographic maps. This coverage was created by the EPA and is available through VGIS.

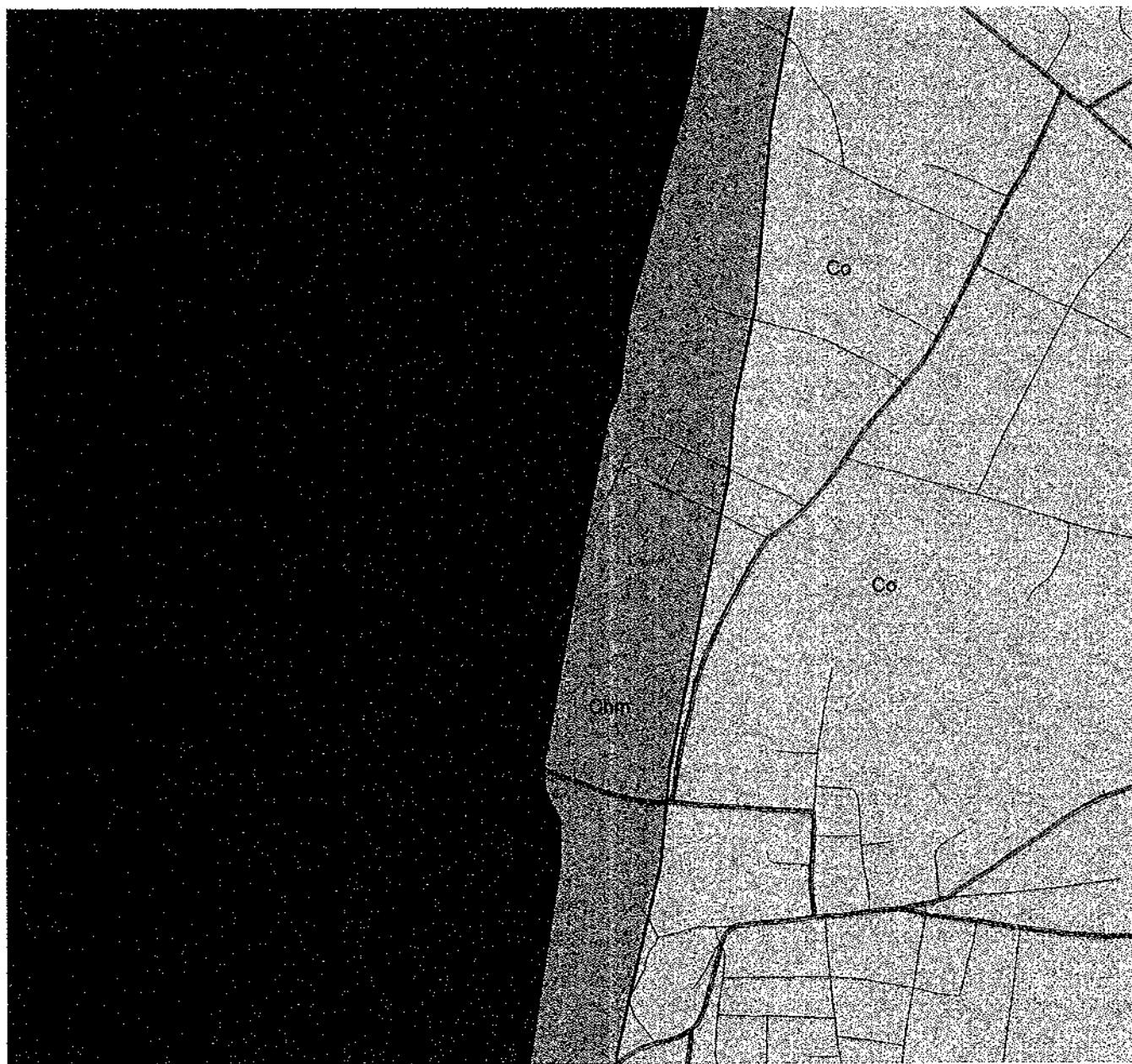
Legend derived from 1:250,000 Surficial Geologic Map of Vermont (1970).



P.O. Box 64708 - Burlington, Vermont - 05406-4709 - Tel. (802) 865-0437 - Fax (802) 866-1014

Bedrock Geology Map

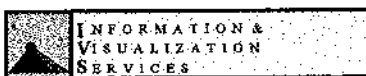
Sweet & Burt Bulk Plant Site - Morrisville, Vermont



1000 0 1000 Feet



BEDROCK LEGEND ON FOLLOWING PAGE.



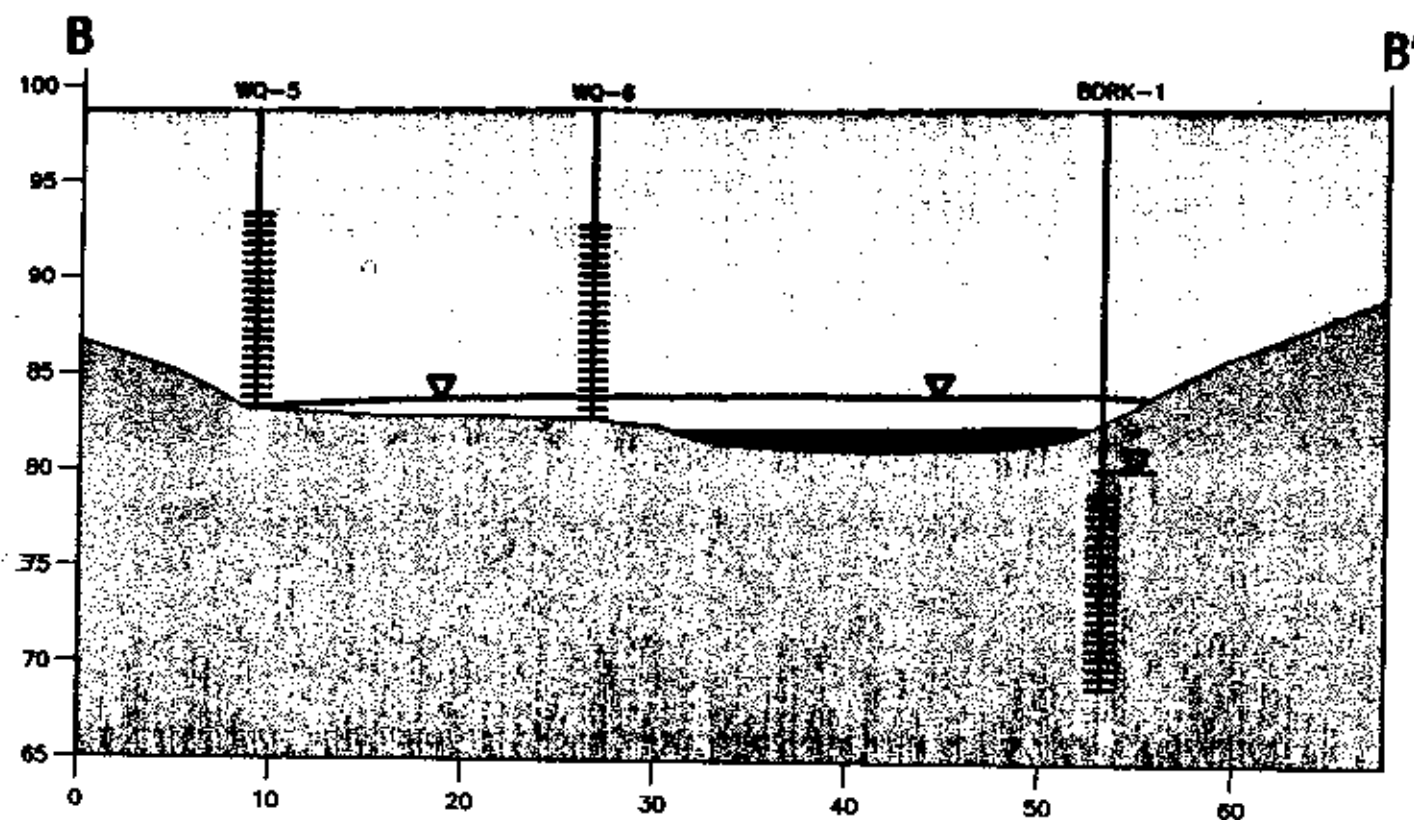
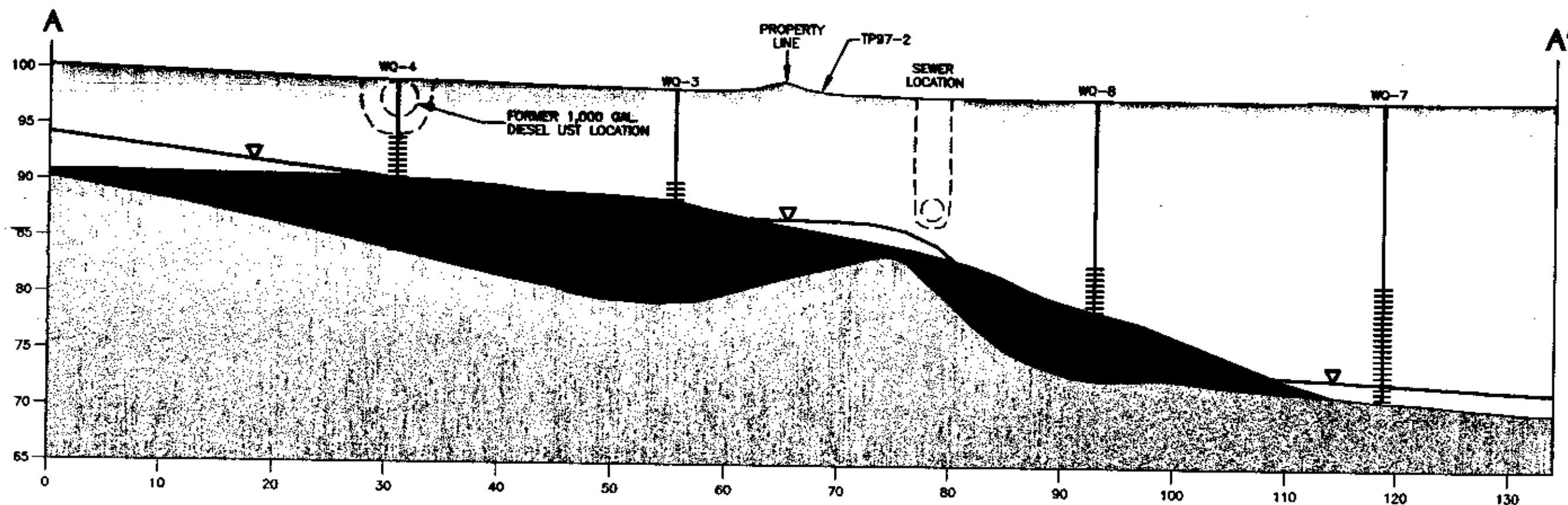
P.O. Box 64708 - Burlington, Vermont - 05406-4708 - Tel: (802) 866-0437 - Fax: (802) 866-1614




Heindel and Noyes



• Hydrogeology • Ecology •
• Environmental Engineering •

CONSULTING SCIENTISTS AND ENGINEERS



-  BROWN COARSE-FINE SAND, AND WELL-ROUNDED GRAVEL.
-  GLACIAL TILL, GREY-OLIVE-GREEN VERY FINE SAND, AND SILT, LITTLE ANGULAR GRAVEL.
-  BEDROCK, HAZENS-NOTCH FORMATION, GREY-GREEN-WHITE CARBONATE SCHIST.

SCALE

HORIZONTAL: 1"=10'

VERTICAL: 1"=10'

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- Environmental Engineering •
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P.O. BOX 64709
BURLINGTON, VERMONT 05406-4709

Prepared By:

DATE: JANUARY 15, 1998

PROJECT NO. 97030

DRAWN BY: M. Luman

PROJ. MGR: E. Swisch

APPROVED: J. Noyes

SWEET & BURT/MORRISVILLE

VERMONT

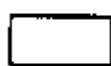
MORRISVILLE,

CROSS SECTIONS A-A' & B-B'

BEDROCK GEOLOGY LEGEND



Road Centerline
Town Boundary



No Label
Features with no label were not attributed on the original source maps.



Surface Water

Topographic Contours

100 Foot Intervals
500 Feet Above Sea Level
1000 Feet Above Sea Level
1500 Feet Above Sea Level
2000 Feet Above Sea Level
2500 Feet Above Sea Level
3000 Feet Above Sea Level
3500 Feet Above Sea Level
4000 Feet Above Sea Level

Faults

Thrust Fault, Upper Plate to West
Thrust Fault, Upper Plate to East
Uncertain Thrust Fault, Upper Plate to West
Uncertain Thrust Fault, Upper Plate to East
Reverse Fault, Upthrown Side to West
Reverse Fault, Upthrown Side to East
Reverse Fault, Location Uncertain
Normal Fault, Downthrown Side to West
Normal Fault, Downthrown Side to East
Normal Fault, Location Uncertain

PLUTONIC ROCKS

PERMIAN OR TRIASSIC

White Mountain Plutonic-Volcanic Series

Basaltic - Many small leucophyre and leucophyre not shown.
Gabbro and hornblende gneiss
Granite
Hornblende, biotite, quartz and augite gneiss
Nepheline syenite and plagioclase
Phenocrystic granite, gabbro
Volcanic breccia, tuff, and lava

DEVONIAN

New Hampshire Plutonic Series

Basaltic Gneiss - Two-mica granodioritic gneiss.
Undifferentiated granitic rocks
Small dikes and sills do not show.
Mass dikes - Monzonitic, melanocratic and mafic, and small in size are chiefly in the Middlebury, Adams and Orwellville formations.

OLIGOCENE PLUTONIC SERIES

Basaltic gneiss and diorite gneiss

ORDOVICIAN

Highlandcroft Plutonic Series

Undifferentiated granitic rocks
Ultramafic rocks
W - diorite, peridotite and xenodiorite, biotite, amphibole, carbonaceous rock, late-silicified rock and staurolite.
W - undifferentiated ultramafic rocks.

CAMBRIAN ROCKS

Bridgman Hill Formation
Undifferentiated dolomite, slate and conglomerate.

Brazeau Formation
Gneiss - phyllite with beds of dolomite, marble, and quartzite; beds of massive dolomite, marble, and quartzite.

Chester Quartzite

Cavendish Formation
Gneiss - massive, quartz-muscovite-white. (Gneiss - Bull Hill Gneiss: quartz-plagioclase-muscovite-biotite gneiss.)

Clarendon Springs, Ticonderoga, and Rock River Dolomites; Gorge Formation

Danaham Dolomite

Danby and Potsdam Formations
Interbedded quartzite and dolomite.

Dillon Formation
Siltstone, quartzite, impure dolomite, and conglomerate.

Foredale Marble

Hazen's Notch Formation
Gneiss - interbedded carbonaceous and noncarbonaceous schist.
Gneiss - Tremont Member: amphibolite and greenstone.
Gneiss - amphibolite and greenstone.

The Hatch Hill and West Casterion Formations
Hatch Hill - calcareous quartzite.
West Casterion - siliceous, carbonaceous schist.

Monkton Quartzite

Moosalamoo Phyllite

Ottawa Formation
Carbonaceous phyllite or schist containing beds of massive quartzite.

Pinnacle Formation
Gneiss - calcareous graywacke.
Gneiss - Tish Hill Volcanic Member.

Parker Slate

Pinney Hollow Formation
Gneiss - fine-grained phyllite with abundant magnetite.
Gneiss - Green Amphibolite Member.
Gneiss - greenstone and calcareous greenstone.
Gneiss - calcareous phyllite and schist.

Rugg Brook Formation
Siltstone, conglomerate, and sandstone.

Sweetburg Formation
Gneiss - calcareous schist.
Gneiss - Tremont Member.
Gneiss - Rockledge Conglomerate Member.
Gneiss - Black Point Member and Hill River Conglomerate Member.
Gneiss - St. Albans Member.

Saxe Brook Dolomite

St. Catherine formation
Gneiss - schist and phyllite.
Gneiss - Tremont Member: impure dolomite.
Gneiss - Hill River Member: quartzite and greenstone.

Tyson Formation
Siltstone, conglomerate, and sandstone.

Underhill Formation
Gneiss - gray-green schist.
Gneiss - Rockledge Member: quartzite schist.
Gneiss - Tremont Member: calcareous schist and phyllite.
Gneiss - White Brook Member: sandy dolomite with crystalline limestone.
Gneiss - Persepolis Member: sandy dolomite and limestone.
Gneiss - Joy Peak Member: schist, locally quartzite.
Gneiss - West Brook Member: schist, minor calcareous interbeds.
Gneiss - Mount Mansfield Member: calcareous schist and calcareous quartzite.
Gneiss - Pleasant Mountain Member: greenstone.

Winooski Dolomite
Siltstone, sandstone, and gray dolomite with thin, irregularly bedded partings.

ORDOVICIAN ROCKS

Stowe Formation
Gneiss - phyllite and schist.
Gneiss - calcareous schist and phyllite.
Gneiss - greenstone and amphibolite.

Pinney Hollow, Ottauquechee, and Stowe Formations, undifferentiated
Quartz schist, carbonaceous schist, and calcareous quartzite.

Ammonoosuc Volcanics

Albee Formation
Quartzite interbedded with slate and phyllite.

Bascom Formation, and undifferentiated Luke Hill, Naylor Lodge and Hastings Creek Limestones
Gneiss - interbedded dolomite, limestone, and quartzite.
Gneiss - limestone and impure dolomite.
Gneiss - Stewart Mountain Phyllite Member.

Cutting dolomite, and undifferentiated Morgan Corner and Wallace Creek Formations

Chipman, Bridport, and Baldens Formations; Providencia Island Dolomite
Gneiss - Bridport Member: dolomite with limestone and calcareous schist.
Gneiss - Baldens Member: limestone.
Gneiss - Chipman Member: limestone with spots of dolomite.

Cumberland Head Formation
Interbedded shale and limestone.

Glenn Falls and Orwell Limestones, undifferentiated

Glenn Falls Formation
Highly fossiliferous limestone.

Hortonville Formation
Phyllite and phyllite with low beds.

Hathaway Formation
Argillite and bedded calcareous sand.

Hortonville, or Cumberland Head, and Glenn Falls Formations, undifferentiated

Iberville Formation
Massive, blocky shale interbedded with dolomite.

Highgate Formation
Bedded limestone and calcareous sand.

SILURIAN ROCKS

Middlebury Formation
NORTHERN VERMONT
Gneiss - phyllite and schist.
Gneiss - calcareous schist and phyllite.
Gneiss - greenstone and amphibolite.

Clough Formation
NE VT - conglomerate with schists of quartzite and schist.
NE VT - quartzite, quartz-conglomerate and mica schist.

Flash Formation
NE VT - sandstone, sandy limestone.
NE VT - granite, impure limestone and dolomite, and mica schist.

Shaw Mountain Formation
NE VT - quartzite, quartz-conglomerate and calcareous schist.
NE VT - quartzite, quartz-conglomerate, conglomerate schist, amphibolite and schist.

DEVONIAN ROCKS

Northfield Formation
Quartzite-schist slate of phyllite with limestone and limestone interbeds.

Gile Mountain Formation
Gneiss - calcareous phyllite or schist.
Gneiss - Hill Stream Member: schist, calcareous schist, schist and amphibolite.
Gneiss - amphibolite.
Gneiss - Middlebury West Member.

Littleton Formation
Gneiss schist and phyllite with interbeds of calcareous quartzite.

Walla River Formation
Gneiss - calcareous and calcareous phyllite.
Gneiss - Standing Pond Volcanic Member: amphibolite and green schist.
Gneiss - Green Hill Member: tough gray quartzite of St. Albans region.
Gneiss - Green River Member: interbedded limestone and phyllite.
Gneiss - Ayres Hill Limestone Member.

Orwell Limestone, and Isle La Motte and Lowellville Limestones

Orwell Formation
Gneiss - calcareous phyllite.
Gneiss - Standing Pond Volcanic Member: greenstone and schist.
Gneiss - Post Pond Volcanic Member: greenstone and schist.

Partridge Formation
Gneiss - NE VT - black calcareous schist and phyllite with beds of quartzite. NE VT - calcareous schist.
Gneiss - calcareous schist and phyllite.

Pawlet Formation
Locally calcareous and phyllite, calcareous sand.

Shelburne, Whitehall, and Stokes Pond Formations
Chiefly a white marble or limestone with gray dolomite nodules.

Stony Point Formation
Calcareous sandstone grading upward into argillaceous limestone.

Stamford Gneiss
Gneiss schist gneiss with megacrysts of minerals.

Undifferentiated gneissic biotite granite, quartz monzonite, and granodiorite

Gneiss, quartzite, calc-silicate granulite

PRECAMBRIAN ROCKS

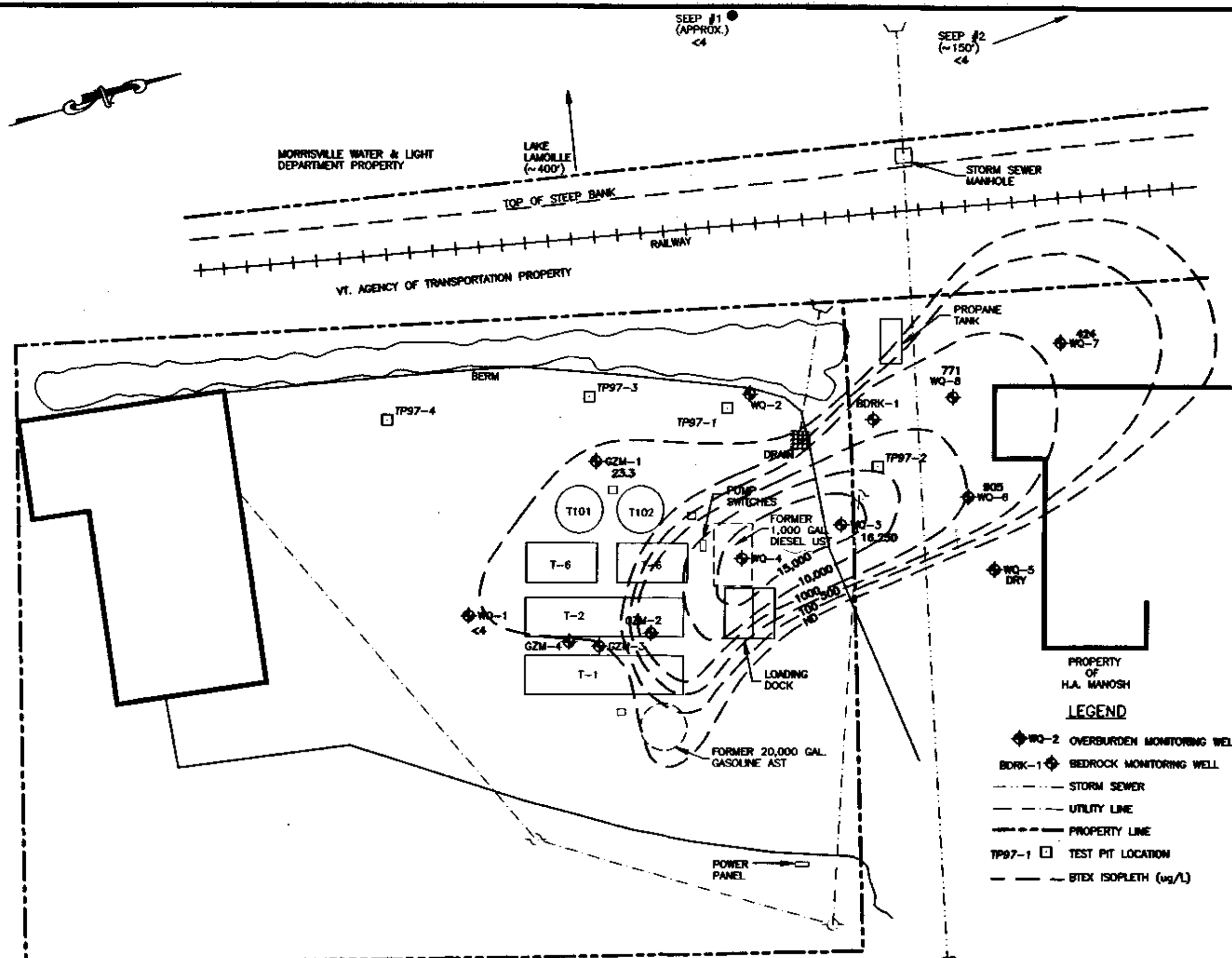
Mount Holly Complex
Gneiss - biotite gneiss, and in eastern area orthogneiss.
Gneiss - quartzite, calc-silicate granulite, and quartz-mica schist.
Gneiss - schist and dolomite schist.

SOURCE NOTES:

Bedrock Geology was digitized and scanned, by Wagner, Heindel, and Noyes, into a PC ARC/INFO database from 1:62,500 original State of Vermont bedrock geology base maps (1955-1960). These maps were made available by Dr. Barry Doonan, Geology Department Chairperson, University of Vermont. Bedrock data for most of the state is available, in 15 minute quads, from IVS (802) 865-0437.
Road Centerlines were generated from pre-1980 1:50,000 orthophotos (or better). Road data (RDSnn) is available from the Vermont Center for Geographic Information, VCGI (802) 866-4277.
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P.O. Box 64709 - Burlington, Vermont - 05406-4709 - Tel (802) 865-0437 - Fax (802) 860-1014 - Email: INFO@VCGI.VERMONT.GOV



MONITORING WELL ELEVATIONS SURVEYED ON 12/18/97 BY E.S. OF NEM. USING GZM-1'S T.O.C. AS A TBM WITH AN ASSUMED ELEVATION OF 100.00'.

Heindel and Noyes

- Hydrogeology • Ecology •
- Environmental Engineering •
- CONSULTING SCIENTISTS AND ENGINEERS

P.O. BOX 84709
BURLINGTON, VERMONT 05408-4708

Prepared by
Information & Visualization Services

DATE: JANUARY 12, 1998
PROJECT NO. 97030
DRAWN BY: M. Luman
PROJ. MGR: E. Swisch
APPROVED: J. Noyes
<input type="checkbox"/> DRAFT <input type="checkbox"/> FINAL

SWEET & BURT/MORRISVILLE	VERMONT
MORRISVILLE,	
BTEX CONCENTRATION CONTOUR MAP - 12/03/97	
SCALE: 1"=20' (APPROX.)	FILE: C:\BDMORRIS\ SITEPLAN

TABLE 1
WATER TABLE ELEVATIONS
December 2, 1997
Sweet & Burt, Inc. - Morrisville Bulk Plant
Morrisville, Vermont

Monitoring Well	TOC Elevation (ft)	Bedrock Elevation (ft)	Depth to Groundwater (ft btc)	Water Table Elevation (ft)
WQ-1	100.00	94.50	2.15	97.85
WQ-2	NL	89.00	NL	NL
WQ-3	97.64	79.64	10.63	87.01
WQ-4	NL	83.34	NL	NL
WQ-5	97.96	83.66	DRY	DRY
WQ-6	97.88	82.88	14.00	83.88
WQ-7	97.56	70.56	25.58	71.98
WQ-8	97.65	72.15	24.29	73.36
GZM-1	100.81	93.81	5.60	95.21
GZM-2	101.72	UNKNOWN	4.09	97.63
GZM-3	102.31	UNKNOWN	4.01	98.30
GZM-4	102.98	UNKNOWN	4.20	98.78
BDRK-1*	98.74	82.24	18.30	80.44

Notes:

- Monitoring well elevations surveyed on 12/19/97 by ES of H&N using WQ-1's TOC as a TBM with an assumed elevation of 100.00'.
- TOC = Top of casing
- btc = below top of casing
- NL = Not Located
- * Bedrock well water level obtained 1 hr. after completion on 12/19/97. Well not used in construction of water table map.

TABLE 2
GROUND WATER QUALITY ANALYSES
Sweet & Burt, Inc. - Morrisville Bulk Plant
Morrisville, Vermont
Page 1 of 3

Parameter	Benzene	Ethyl-Benzene	MTBE	Toluene	Total Xylenes	Ace-naphthene	Fluorene	1-Methyl-naphthalene	2-Methyl-naphthalene	Phenanthrene	Napthalene	Unidentified Peaks***
VT Enforcement Standard [1]	5	700	none	1000	10000	none	280	none	none	none	20.0	---
VT Preventive Action Limit [1]	0.5	350	none	500	5000	none	140	none	none	none	10.0	---
VT Health Advisory [2]	1	none	40	none	none	none	280	none	none	none	20.0	---
Federal MCL [2]	5	700	none	1000	10,000	none	none	none	none	none	none	---
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	---

WQ-1												
07/15/92	<1	<1	12.9	<1	<1	NT	NT	NT	NT	NT	NT	0
12/10/96	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
12/03/97	<1	<1	<10	<1	<1	<2	<2	<2	<2	<2	<2	0, >10

WQ-2*												
07/15/92	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY
12/10/96	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
12/03/97	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

WQ-3												
07/15/92	1140	1410	526	2810	9370	NT	NT	NT	NT	NT	NT	>10,
12/10/96	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
12/03/97	1910	1550	<2000	1090	11700	<100	<100	400	810	100	850	>10, >10

WQ-4*												
07/15/92	NT**	NT**	NT**	NT**	NT**	NT**	NT**	NT**	NT**	NT**	NT**	NT**
12/10/96	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
12/03/97	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

WQ-5												
12/03/97	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY	DRY

WQ-6												
12/03/97	465	110	<50	133.3	197	<2	<2	27.4	49.3	<2	49.2	>10, >10

WQ-7												
12/03/97	120	125	<50	6	173	<10	65	406	832	93.5	268	>10, >10

TABLE 2 (cont'd)
GROUND WATER QUALITY ANALYSES
Sweet & Burt, Inc. - Morrisville Bulk Plant
Morrisville, Vermont
Page 2 of 3

Parameter	Benzene	Ethyl-Benzene	MTBE	Toluene	Total Xylenes	Acenaphthene	Fluorene	1-Methylnaphthalene	2-Methylnaphthalene	Phenanthrene	Napthalene	Unidentified Peaks
VT Enforcement Standard [1]	5	700	none	1000	10000	none	280	none	none	none	20.0	---
VT Preventive Action Limit [1]	0.5	350	none	500	5000	none	140	none	none	none	10.0	---
VT Health Advisory [2]	1	none	40	none	none	none	280	none	none	none	20.0	---
Federal MCL [2]	5	700	none	1000	10,000	none	none	none	none	none	none	---
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	---

WQ-3												
12/03/97	299	125	<100	24.1	323	TBQ<2	2	2	<2	TBQ<2	<2	>10, >10

GZM-1 (TP-2)												
11/21/91	<2	<1	<1	20.4	230	NT	NT	NT	NT	NT	NT	3
07/15/92	322	<5	<25	<5	29.1	NT	NT	NT	NT	NT	NT	11
12/10/96	<10	<10	<10	<10	<10	NT	NT	NT	NT	NT	<20	>1
12/03/97	2.7	19.3	<10	<1	1.3	<2	TBQ<2	<2	<2	<2	<2	>10, >10

GZM-2 (MW-C)												
07/15/92	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
12/10/96	327	<300	<300	1250	1122	NT	NT	NT	NT	NT	<600	>1
12/09/97	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

GZM-3 (MW-B)												
07/15/92	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
12/10/96	<2	<2	<2	6	6	NT	NT	NT	NT	NT	<4	0
12/09/97	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

GZM-4 (MW-A)												
07/15/92	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
12/10/96	<2	<2	<2	<2	<2	NT	NT	NT	NT	NT	<4	0
12/09/97	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

BDRK-1												
12/09/97	120	111	<20	6.6	289	<2	TBQ<2	31.7	56.2	TBQ<2	64.5	>10, >10

TABLE 2 (cont'd)
GROUND WATER QUALITY ANALYSES
Sweet & Burt, Inc. - Morrisville Bulk Plant
Morrisville, Vermont
Page 3 of 3

Parameter	Benzene	Ethyl- Benzene	MTBE	Toluene	Total Xylenes	Ace- naphthene	Fluorene	1-Methyl- naphthalene	2-Methyl- naphthalene	Phenanthrene	Napthalene	Unidentified Peaks***
VT Enforcement Standard [1]	5	700	none	1000	10000	none	280	none	none	none	20.0	---
VT Preventive Action Limit [1]	0.5	350	none	500	5000	none	140	none	none	none	10.0	---
VT Health Advisory [2]	1	none	40	none	none	none	280	none	none	none	20.0	---
Federal MCL [2]	5	700	none	1000	10,000	none	none	none	none	none	none	---
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	---

Seep #1												
12/19/97	<1	<1	<10	<1	<1	<2	<2	<2	<2	<2	<2	>10.0

Seep #2												
12/19/97	<1	<1	<10	<1	<1	<2	<2	<2	<2	<2	<2	0.0

NT = Well/Compound not tested

* = Well could not be located during December 1997 sampling event.

** = Well not sampled due to presence of free product.

*** = First value via Epa 602, second via EPA 8100.

[1] Vermont ESs and PALs from 1997 GWPRS

[2] Vermont HAS and Federal MCLs from March 1996 Vermont Health Advisory Reference Guide

NOTE: Shaded values exceed VT enforcement standard or VT Health Advisory.

TEST PIT LOGS

SWEET AND BURT BULK STORAGE FACILITY Morrisville, Vermont

Page 1

Test pit conducted by excavator (Craig Cowles) on November 20, 1997. Soils logged by Eric Swiech (H&N).

GW = Ground water

NGWTD = No groundwater to depth

NBRTD = No bedrock to depth

bgs = below ground surface

NT = Not Tested

TP97-1

(Location: NW property corner, 5' SW of storm drain grate.)

0-2'	Brn-grey vc-f Gravel, and c-f Sand, trace silt. Moist. Slight-moderate odor. PID = 19 ppm.
2-4'	Same as above. PID = 30 ppm.
4-6'	Same as above. PID = 80 ppm.
6-8'	Same as above. PID = 7.0 ppm.
8-9.0'	Same as above except wet at 9.0' bgs. PID = 2.0 ppm.
9.0-9.5'	Same as above plus black staining and strong odor PID = 65 ppm.
Refusal on bedrock at 9.5' bgs. Small volume of GW with sheen accumulated on top of competent bedrock. No fractures observed.	

TP97-2

(Location: 5' north of utility pole on northern property boundary.)

0-5'	Brn vc-vf Gravel, and c-f Sand. Odor. Damp. PID = NT
5-9'	Brn m-f SAND, and Silt. Damp. PID = 80 ppm
9-16'	Brn - black vc-vf Gravel, and c-f Sand. Odor, staining. Saturated below 12'. PID = 120 ppm @ 12' bgs PID = 150 ppm @ 16' bgs
Refusal on bedrock at 16' bgs. No fractures observed.	

TP97-3

(Location: West of AST 101, along tree line on berm.)

0-5.5'	Brn m-f SAND, some Silt and Gravel. Dry. No odor, no staining. PID = 0.8 ppm
Refusal on bedrock at 5.5' bgs.	

TP97-4

(Location: South of TP97-3, 30' north of garage, perpendicular to berm.)

0-2'	Brn c-f Gravel, and m-f Sand. Dry-moist. Bedrock @ 2' bgs near tree line.
2-4'	Till. Grey c-f Sand, and silt, little angular gravel. Moist. No odor. Bedrock slopes to 4' bgs approximately 30' east of tree line. PID = 0.4 ppm

SOIL BORING LOG

HEINDEL & NOYES P.O. BOX 64709 BURLINGTON, VT 05406-4709				Project: Sweet and Burt/ Morrisville Morrisville, Vermont		Boring Number: WQ-5 Sheet _____ of _____ Project Number: 97030									
Boring Company: Tri-State Foreman: Tharon Faulkner H&N Staff: Eric Swiech						Boring Location: See Figure Ground Elevation: _____ Date Started: 11/24/97 Date Ended: 11/24/97									
Casing Type: hollow-stem auger I.D.: 3 1/4" Hammer: 140 lb Fall: 30"				Sampler Type: split spoon I.D.: 1.5" Hammer: _____ Fall: _____		Groundwater Readings <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Date</th> <th>Depth</th> <th>Casing</th> <th>Stabil. Time</th> </tr> <tr> <td>12/2/97</td> <td>DRY</td> <td></td> <td></td> </tr> </table>		Date	Depth	Casing	Stabil. Time	12/2/97	DRY		
Date	Depth	Casing	Stabil. Time												
12/2/97	DRY														
	No.	Rec. (ft)	Depth (ft)	Blows	Sample Description	Strata	PID (ppm)	Equipment or Well Installed							
5	1	none	1-3	1,6,10,10	N/A	SAND/ Gravel	N/A	<div style="display: flex; flex-direction: column; align-items: flex-end; margin-top: 5px;"> <div>concrete</div> <div>bentonite</div> <div>2" PVC casing</div> <div>drill cuttings</div> <div>0.020" screen</div> <div>"Socked"</div> <div>Bedrock @ 14.3</div> <div>No ground water</div> </div>							
	2	1.2	5-7	2,9,13,15	Top 0.8' = Brn c-f SAND, some Silt and well rounded Gravel. Moist. Next 0.4' = Grey vc-f Sand, and Gravel. Moist. No odor, no staining.		0.1								
	3	none	10-12	11,15,6,5	N/A		N/A								
10															
15					END OF BORING @ 14.3' BGS										
20						BDRK									
21															
22															
23															
24															
25															
26															
27															
28															
29															
30															
31															
32															
33															
34															
35															

SOIL BORING LOG

HEINDEL & NOYES P.O. BOX 64709 BURLINGTON, VT 05406-4709				Project: Sweet and Burt/ Morrisville Morrisville, Vermont		Boring Number: WQ-6 Sheet _____ of _____ Project Number: 97030															
Boring Company: Tri-State Foreman: Tharon Faulkner H&N Staff: Eric Swiech						Boring Location: See Figure Ground Elevation: _____ Date Started: 11/24/97 Date Ended: 11/24/97															
Casing Type: hollow-stem auger I.D.: 3 1/4" Hammer: 140 lb Fall: 30"					Sampler Type: split spoon I.D.: 1.5" Hammer: _____ Fall: _____					Groundwater Readings <table style="width:100%; border-collapse: collapse;"> <tr> <th>Date</th> <th>Depth</th> <th>Casing</th> <th>Stabil. Time</th> </tr> <tr> <td>12/2/97</td> <td>14'</td> <td>PVC</td> <td>8 days</td> </tr> </table>				Date	Depth	Casing	Stabil. Time	12/2/97	14'	PVC	8 days
Date	Depth	Casing	Stabil. Time																		
12/2/97	14'	PVC	8 days																		
5	1	1.0	5-7	3,3,2,3	Brn c-f Sand, and well rounded Gravel, little silt. Moist. Slight odor, no staining.	SAND/ Gravel	1.2														
	2	0.8	10-12	7,15,12,7			1.2														
10	3	0.2	14-16	7,14, >100	Same as above, except strong odor, slight sheen. Refusal on bedrock. END OF BORING @ 15.0' BGS.	BDRK	60														
	16																				
20																					
25																					
30																					
35																					

SOIL BORING LOG

HEINDEL & NOYES P.O. BOX 64709 BURLINGTON, VT 05406-4709				Project: Sweet and Burt/ Morrisville Morrisville, Vermont		Boring Number: WQ-7 Sheet _____ of _____ Project Number: 97030			
Boring Company: Tri-State Foreman: Tharon Faulkner H&N Staff: Eric Swiech						Boring Location: See Figure Ground Elevation: _____ Date Started: 11/24/97 Date Ended: 11/24/97			
<u>Casing</u> Type: hollow-stem auger I.D.: 3 1/4" Hammer: 140 lb Fall: 30"		<u>Sampler</u> Type: split spoon I.D.: 1.5" Hammer: _____ Fall: _____		Groundwater Readings Date Depth Casing Stabil. Time 12/2/97 25.58' PVC 8 days					
	No.	Rec. (ft)	Depth (ft)	Blows	Sample Description	Strata	PID (ppm)	Equipment or Well Installed	
5	1	0.6	6-7	16,13,15,8	Brn-grey vc-m SAND, and well rounded Gravel. Dry. No odor, no staining.	SAND/ Gravel	1.6		
10	2	1.0	10-12	3,5,7,7	Same as above. No odor, no staining.	SAND/ Gravel	0.6		
15	3	0.6	16-17	5,5,5,4	C-f Gravel, and brn-grey c-m Sand. Dry. No odor, no staining.	SAND/ Gravel	0.6		
20	4	1.5	20-22	8,15,26,44	Same as above.	SAND/ Gravel	0.4		
25	5	1.0	25-27	8,12,16,14	Top 0.8' = Brn well sorted m SAND. Moist. Slight odor at bottom of spoon. Bottom 0.2' = Schist fragments.	SAND/ Gravel	20		
30					REFUSAL/BEDROCK @ 27' BGS.	BDRK			
35						BDRK			

SOIL BORING LOG

HEINDEL & NOYES P.O. BOX 64709 BURLINGTON, VT 05406-4709				Project: Sweet and Burt/ Morrisville Morrisville, Vermont				Boring Number: WQ-8 Sheet _____ of _____ Project Number: 97030			
Boring Company: Tri-State Foreman: Tharon Faulkner H&N Staff: Eric Swiech								Boring Location: See Figure Ground Elevation: _____ Date Started: 11/24/97 Date Ended: 11/24/97			
<u>Casing</u> Type: hollow-stem auger I.D.: 3 1/4" Hammer: 140 lb Fall: 30"				<u>Sampler</u> Type: split spoon I.D.: 1.5" Hammer: _____ Fall: _____				Groundwater Readings Date Depth Casing Stabil. Time 12/2/97 24.29' PVC 8 days			
	No.	Rec. (ft)	Depth (ft)	Blows	Sample Description	Strata	PID (ppm)	Equipment or Well Installed			
5	1	1.0	6-7	9,12,14,14	Brn c-f Sand, and well rounded Gravel. Dry. No odor, no staining.	SAND/ Gravel	0.8				
	2	0.8	10-12	3,6,8,10	Same as above. No odor, no staining.		0.4				
	3	0.8	15-17	5,13,13,11	Brn-grey c-f Sand, and well rounded Gravel. Dry. No odor, no staining.		0.4				
20	4	0.5	20-22	71,-	Greyish-green f-vf Sand, and silt, little angular gravel. Dense. Moist. Odor.	TILL	3.0				
25	5	0.5	25-27	80,-	Same as above except sheen and strong odor.	BDRK	97.0				
30					REFUSAL/BEDROCK @ 25.5' BGS.						
35											

SOIL BORING LOG

HEINDEL & NOYES P.O. BOX 64709 BURLINGTON, VT 05406-4709				Project: Sweet and Burt/ Morrisville Morrisville, Vermont		Boring Number: BDRK-1 Sheet _____ of _____ Project Number: 97030			
Boring Company: Tri-State Foreman: Tharon Faulkner H&N Staff: Eric Swiech						Boring Location: See Figure Ground Elevation: _____ Date Started: 12/2/97 Date Ended: 12/19/97			
Casing Type: _____ I.D.: _____ Hammer: _____ Fall: _____		Sampler Type: _____ I.D.: _____ Hammer: _____ Fall: _____		Groundwater Readings Date: 12/19/97 Depth: 18.7' Casing: Steel Stabil. Time: 1 hr					
	No.	Rec. (ft)	Depth (ft)	Blows	Sample Description	Strata	PID (ppm)	Equipment or Well Installed	
5					Note: Hollow stem auger to bedrock (16.5' bgs), air-rotary to 20' bgs, set 4" galvanized steel casing, grouted with portland cement (let set for 24 hr), cored with diamond bit to 30' bgs.	SAND/ Gravel		<div style="position: absolute; right: 0; top: 0;"> bentonite 10" borehole 4" steel casing drill cuttings Portland Cement Bedrock @ 16.5' 5 1/2" borehole water level 18.7' 20' 3" open core 30' </div>	
10					Greenish-grey carbonate schist, near vertical fabric, several qtz and calcite veins running parallel to, and cross-cutting fabric. Oxidation and dissolution along calcite veins on top core (20-20.25' bgs). 20.25-30.0' bgs = competent bedrock, no obvious fractures.	BDRK			
15									
20									
25									
30									
35									

SOIL PROBE LOG

Tri-State Drilling & Boring, Inc.
RFD #2 Box 113
West Burke, Vermont 05871
(802) 467-3123

Date: 11/24/97
M-W WQ-6
Project: Sweet & Burt
Page 2
Town- Morrisville, VT

Hammer 140" Fall 30" Sampler 2" Splitspoon
DEPTH BLOW COUNTS REC SOIL

[illegible]

DRILLER'S NOTES & COMMENTS

Silty very fine to coarse sand & gravel
Coarse sand & gravel
Coarse sand & gravel
Set well @ 15'

MACHINE TIME

WELL DEVELOPMENT TIME

Client: Wagner, Heindel & Noyes

Job location: Morrisville, VT

Engineer: Eric

Inspector: Eric

Driller Tharon

Helper Geoff

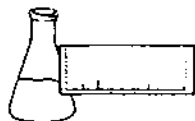
Preparer's Initials: NSF

Well construction Report

MATERIALS USED:

Screen	
Riser	
Caps	
L. Plug	
Sand	4
Bentonite	
Hole Plug	1/2 2
Enviro Grout	
Road Boxe	1
Well Guards	
Misc.	

Set well @ 15' Sand pack to 4'/holeplug to 2'



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt/Morrisville
REPORT DATE: December 12, 1997
DATE SAMPLED: December 3, 1997

PROJECT CODE: HNSB1650
REF.#: 114,212 - 114,219

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

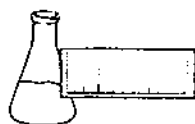
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

**ENDYNE, INC.****Laboratory Services**

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

EPA METHOD 8020--PURGEABLE AROMATICS**CLIENT:** Heindel and Noyes**DATE RECEIVED:** December 5, 1997**PROJECT NAME:** Sweet & Burt/Morrisville**REPORT DATE:** December 12, 1997**CLIENT PROJ. #:** 97030**PROJECT CODE:** HNSB1650

Ref. #:	114,212	114,213	114,214	114,215	114,216
Site:	WQ-1	WQ-3	WQ-6	WQ-7	WQ-8
Date Sampled:	12/3/97	12/3/97	12/3/97	12/3/97	12/3/97
Time Sampled:	16:10	15:50	14:30	15:00	15:20
Sampler:	E.S.	E.S.	E.S.	E.S.	E.S.
Date Analyzed:	12/11/97	12/11/97	12/12/97	12/11/97	12/11/97
UIP Count:	0	>10	>10	>10	>10
Dil. Factor (%):	100	0.5	20	20	10
Surr % Rec. (%):	115	107	106	117	109
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)
Benzene	<1	1,910.	465.	120.	299.
Chlorobenzene	<1	<200	<5	<5	<10
1,2-Dichlorobenzene	<1	<200	<5	<5	<10
1,3-Dichlorobenzene	<1	<200	<5	<5	<10
1,4-Dichlorobenzene	<1	<200	<5	<5	<10
Ethylbenzene	<1	1,550.	110.	77.6	125.
Toluene	<1	1,090.	13.3	6.0	24.1
Xylenes	<1	11,700.	197.	173.	323.
MTBE	<10	<2000	<50	<50	<100

Ref. #:	114,217	114,218	114,219		
Site:	GZM-1	WQ-3D	Trip Blank		
Date Sampled:	12/3/97	12/3/97	12/3/97		
Time Sampled:	16:30	15:50	10:00		
Sampler:	E.S.	E.S.	E.S.		
Date Analyzed:	12/11/97	12/11/97	12/11/97		
UIP Count:	>10	>10	0		
Dil. Factor (%):	100	0.5	100		
Surr % Rec. (%):	121	103	111		
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)		
Benzene	2.7	2,050.	<1		
Chlorobenzene	<1	<200	<1		
1,2-Dichlorobenzene	<1	<200	<1		
1,3-Dichlorobenzene	<1	<200	<1		
1,4-Dichlorobenzene	<1	<200	<1		
Ethylbenzene	19.3	1,720.	<1		
Toluene	<1	1,190.	<1		
Xylenes	1.3	12,900.	<1		
MTBE	<10	<2000	<10		

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated

HNS B1651

CHAIN-OF-CUSTODY RECORD

22971

114,212 — 114,226

Project Name: SWEET + BURT / MORRISVILLE Site Location: MORRISVILLE, VT	Reporting Address: H&N	Billing Address: H&N H 77030
Endyne Project Number: HNSR 1650	Company: H&N Contact Name/Phone #: ERIC SWIERCH	Sampler Name: ES Phone #: 658-0820

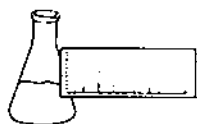
[illegible]

Relinquished by: Signature <i>Em. T. Smith</i>	Received by: Signature <i>Priscilla N. Charles</i>	Date/Time <i>12/5/97 8:00 am</i>
Relinquished by: Signature	Received by: Signature	Date/Time

New York State Project: Yes No

Requested Analyses

[illegible]

**ENDYNE, INC.****Laboratory Services**

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Heindel & Noyes
PROJECT NAME: Sweet & Burt/Morrisville
REPORT DATE: December 29, 1997
DATE SAMPLED: December 19, 1997

PROJECT CODE: HNSB1768
REF.#: 114,842 - 114,844

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

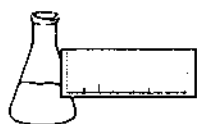
Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Heindel & Noyes

DATE RECEIVED: December 20, 1997

PROJECT NAME: Sweet & Burt/Morrisville

REPORT DATE: December 29, 1997

CLIENT PROJ. #: NI

PROJECT CODE: HNSB1768

Ref. #:	114,842	114,843	114,844		
Site:	Bedrock 1	Seep #1	Seep #2		
Date Sampled:	12/19/97	12/19/97	12/19/97		
Time Sampled:	NI	NI	NI		
Sampler:	E.S.	E.S.	E.S.		
Date Analyzed:	12/26/97	12/24/97	12/26/97		
UIP Count:	>10	>10	0		
Dil. Factor (%):	50	100	100		
Surr % Rec. (%):	94	89	86		
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)		
Benzene	120.	<1	<1		
Chlorobenzene	<2	<1	<1		
1,2-Dichlorobenzene	<2	<1	<1		
1,3-Dichlorobenzene	<2	<1	<1		
1,4-Dichlorobenzene	<2	<1	<1		
Ethylbenzene	111.	<1	<1		
Toluene	6.6	<1	<1		
Xylenes	289.	<1	<1		
MTBE	<20	<10	<10		

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated



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32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

HNSB1769

CHAIN-OF-CUSTODY RECORD

114842 - 114847

22972

Project Name: <i>SAVET + GUET / MORRISVILLE</i> Site Location:	Reporting Address: <i>H&N</i>	Billing Address: <i>H&N</i>
Endyne Project Number: <i>HNSB1768</i>	Company: <i>H&N</i> Contact Name/Phone #: <i>GS. 658-0920</i>	Sampler Name: <i>ES</i> Phone #:

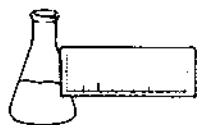
[illegible]

Relinquished by: Signature <i>Eric Bail</i>	Received by: Signature	Date/Time
Relinquished by: Signature	Received by: Signature	Date/Time

New York State Project: Yes No

Requested Analyses

[illegible]



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
DATE REPORTED: December 22, 1997
DATE SAMPLED: December 3, 1997

PROJECT CODE: HNSB1651
REF. #: 114,220 - 114,226

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody did not indicate sample preservation.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

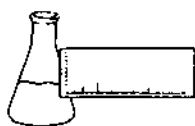
Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate data was determined to be within Laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT PAH'S BY EPA METHOD 8270

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
REPORT DATE: December 22, 1997
DATE SAMPLED: December 3, 1997
DATE RECEIVED: December 5, 1997
DATE EXTRACTED: December 10, 1997

PROJECT CODE: HNSB1651
ANALYSIS DATE: December 17, 1997
STATION: WQ-1
REF. #: 114,220
TIME SAMPLED: 1610
SAMPLER: Eric Swiech

<u>Parameter</u>	<u>Quantitation</u> <u>Limit (ug/L)</u>	<u>Concentration</u> <u>(ug/L)</u>
Acenaphthene	2	ND ¹
Acenaphthylene	2	ND
Anthracene	2	ND
Benzo(a)anthracene	2	ND
Benzo(b&k)fluoranthene	2	ND
Benzo(a)pyrene	2	ND
Benzo(ghi)perylene	2	ND
Chrysene	2	ND
Dibenzo(a,h)anthracene	2	ND
Fluoranthene	2	ND
Fluorene	2	ND
Indeno(1,2,3-cd)pyrene	2	ND
1-Methylnaphthalene	2	ND
2-Methylnaphthalene	2	ND
Naphthalene	2	ND
Phenanthrene	2	ND
Pyrene	2	ND

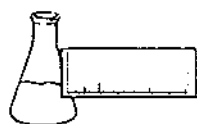
NUMBER OF UNIDENTIFIED PEAKS: >10

Analytical Surrogate Recovery:

Nitrobenzene-d 5:	66.%
2-Fluorobiphenyl:	75.%
Terphenyl-d 14:	78.%

NOTES:

1 None detected



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT
PAH'S BY EPA METHOD 8270

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
REPORT DATE: December 22, 1997
DATE SAMPLED: December 3, 1997
DATE RECEIVED: December 5, 1997
DATE EXTRACTED: December 10, 1997

PROJECT CODE: HNSB1651
ANALYSIS DATE: December 17, 1997
STATION: WQ-3
REF. #: 114,221
TIME SAMPLED: 1550
SAMPLER: Eric Swiech

<u>Parameter</u>	<u>Quantitation</u> <u>Limit (ug/L)¹</u>	<u>Concentration</u> <u>(ug/L)</u>
Acenaphthene	100	ND ²
Acenaphthylene	100	ND
Anthracene	100	ND
Benzo(a)anthracene	100	ND
Benzo(b&k)fluoranthene	100	ND
Benzo(a)pyrene	100	ND
Benzo(ghi)perylene	100	ND
Chrysene	100	ND
Dibenzo(a,h)anthracene	100	ND
Fluoranthene	100	ND
Fluorene	100	ND
Indeno(1,2,3-cd)pyrene	100	ND
1-Methylnaphthalene	100	400.
2-Methylnaphthalene	100	810.
Naphthalene	100	850.
Phenanthrene	100	ND
Pyrene	100	ND

NUMBER OF UNIDENTIFIED PEAKS: >10

Analytical Surrogate Recovery:

Nitrobenzene-d 5:	125.%
2-Fluorobiphenyl:	88.%
Terphenyl-d 14:	75.%

NOTES:

- 1 Detection limit increased due to high levels of non-target contaminants.
- 2 None detected



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT PAH'S BY EPA METHOD 8270

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
REPORT DATE: December 22, 1997
DATE SAMPLED: December 3, 1997
DATE RECEIVED: December 5, 1997
DATE EXTRACTED: December 10, 1997

PROJECT CODE: HNSB1651
ANALYSIS DATE: December 17, 1997
STATION: WQ-6
REF. #: 114,222
TIME SAMPLED: 1430
SAMPLER: Eric Swiech

<u>Parameter</u>	<u>Quantitation</u> <u>Limit (ug/L)</u>	<u>Concentration</u> <u>(ug/L)</u>
Acenaphthene	2	ND ¹
Acenaphthylene	2	ND
Anthracene	2	ND
Benzo(a)anthracene	2	ND
Benzo(b&k)fluoranthene	2	ND
Benzo(a)pyrene	2	ND
Benzo(ghi)perylene	2	ND
Chrysene	2	ND
Dibenzo(a,h)anthracene	2	ND
Fluoranthene	2	ND
Fluorene	2	ND
Indeno(1,2,3-cd)pyrene	2	ND
1-Methylnaphthalene	2	27.4
2-Methylnaphthalene	2	49.3
Naphthalene	2	49.2
Phenanthrene	2	ND
Pyrene	2	ND

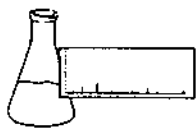
NUMBER OF UNIDENTIFIED PEAKS: >10

Analytical Surrogate Recovery:

Nitrobenzene-d 5:	92.%
2-Fluorobiphenyl:	81.%
Terphenyl-d 14:	85.%

NOTES:

1 None detected



ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT
PAH'S BY EPA METHOD 8270

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
REPORT DATE: December 22, 1997
DATE SAMPLED: December 3, 1997
DATE RECEIVED: December 5, 1997
DATE EXTRACTED: December 10, 1997

PROJECT CODE: HNSB1651
ANALYSIS DATE: December 18, 1997
STATION: WQ-7
REF. #: 114,223
TIME SAMPLED: 1500
SAMPLER: Eric Swiech

<u>Parameter</u>	<u>Quantitation</u> <u>Limit (ug/L)¹</u>	<u>Concentration</u> <u>(ug/L)</u>
Acenaphthene	10	ND ²
Acenaphthylene	10	ND
Anthracene	10	ND
Benzo(a)anthracene	10	ND
Benzo(b&k)fluoranthene	10	ND
Benzo(a)pyrene	10	ND
Benzo(ghi)perylene	10	ND
Chrysene	10	ND
Dibenzo(a,h)anthracene	10	ND
Fluoranthene	10	ND
Fluorene	10	65.0
Indeno(1,2,3-cd)pyrene	10	ND
1-Methylnaphthalene	10	406.
2-Methylnaphthalene	10	832.
Naphthalene	10	268.
Phenanthrene	10	93.5
Pyrene	10	ND

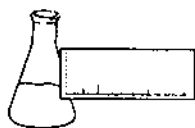
NUMBER OF UNIDENTIFIED PEAKS: >10

Analytical Surrogate Recovery:

Nitrobenzene-d 5:	86.%
2-Fluorobiphenyl:	98.%
Terphenyl-d 14:	88.%

NOTES:

- 1 Detection limit increased due to high levels of non-target contaminants.
- 2 None detected



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LABORATORY REPORT
PAH'S BY EPA METHOD 8270

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
REPORT DATE: December 22, 1997
DATE SAMPLED: December 3, 1997
DATE RECEIVED: December 5, 1997
DATE EXTRACTED: December 10, 1997

PROJECT CODE: HNSB1651
ANALYSIS DATE: December 18, 1997
STATION: WQ-8
REF. #: 114,224
TIME SAMPLED: 1520
SAMPLER: Eric Swiech

<u>Parameter</u>	<u>Quantitation</u> <u>Limit (ug/L)</u>	<u>Concentration</u> <u>(ug/L)</u>
Acenaphthene	2	TBQ ¹
Acenaphthylene	2	ND ²
Anthracene	2	ND
Benzo(a)anthracene	2	ND
Benzo(b&k)fluoranthene	2	ND
Benzo(a)pyrene	2	ND
Benzo(ghi)perylene	2	ND
Chrysene	2	ND
Dibenzo(a,h)anthracene	2	ND
Fluoranthene	2	ND
Fluorene	2	2.0
Indeno(1,2,3-cd)pyrene	2	ND
1-Methylnaphthalene	2	2.0
2-Methylnaphthalene	2	ND
Naphthalene	2	ND
Phenanthrene	2	TBQ
Pyrene	2	ND

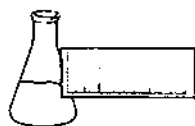
NUMBER OF UNIDENTIFIED PEAKS: >10

Analytical Surrogate Recovery:

Nitrobenzene-d 5:	124.%
2-Fluorobiphenyl:	97.%
Terphenyl-d 14:	104.%

NOTES:

- 1 Trace below quantitation limit
- 2 None detected



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LABORATORY REPORT
PAH'S BY EPA METHOD 8270

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
REPORT DATE: December 22, 1997
DATE SAMPLED: December 3, 1997
DATE RECEIVED: December 5, 1997
DATE EXTRACTED: December 10, 1997

PROJECT CODE: HNSB1651
ANALYSIS DATE: December 17, 1997
STATION: GZM-1
REF. #: 114,225
TIME SAMPLED: 1630
SAMPLER: Eric Swiech

<u>Parameter</u>	<u>Quantitation</u> <u>Limit (ug/L)</u>	<u>Concentration</u> <u>(ug/L)</u>
Acenaphthene	2	ND ¹
Acenaphthylene	2	ND
Anthracene	2	ND
Benzo(a)anthracene	2	ND
Benzo(b&k)fluoranthene	2	ND
Benzo(a)pyrene	2	ND
Benzo(ghi)perylene	2	ND
Chrysene	2	ND
Dibenzo(a,h)anthracene	2	ND
Fluoranthene	2	ND
Fluorene	2	TBQ ²
Indeno(1,2,3-cd)pyrene	2	ND
1-Methylnaphthalene	2	ND
2-Methylnaphthalene	2	ND
Naphthalene	2	ND
Phenanthrene	2	ND
Pyrene	2	ND

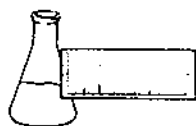
NUMBER OF UNIDENTIFIED PEAKS: >10

Analytical Surrogate Recovery:

Nitrobenzene-d 5:	132.%
2-Fluorobiphenyl:	94.%
Terphenyl-d 14:	101.%

NOTES:

- 1 None detected
- 2 Trace below quantitation limit



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LABORATORY REPORT
PAH'S BY EPA METHOD 8270

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
REPORT DATE: December 22, 1997
DATE SAMPLED: December 3, 1997
DATE RECEIVED: December 5, 1997
DATE EXTRACTED: December 10, 1997

PROJECT CODE: HNSB1651
ANALYSIS DATE: December 17, 1997
STATION: WQ-3D
REF. #: 114,226
TIME SAMPLED: 1550
SAMPLER: Eric Swiech

<u>Parameter</u>	<u>Quantitation</u> <u>Limit (ug/L)</u>	<u>Concentration</u> <u>(ug/L)</u>
Acenaphthene	40	ND ¹
Acenaphthylene	40	ND
Anthracene	40	ND
Benzo(a)anthracene	40	ND
Benzo(b&k)fluoranthene	40	ND
Benzo(a)pyrene	40	ND
Benzo(ghi)perylene	40	ND
Chrysene	40	ND
Dibenzo(a,h)anthracene	40	ND
Fluoranthene	40	ND
Fluorene	40	TBQ ²
Indeno(1,2,3-cd)pyrene	40	ND
1-Methylnaphthalene	40	618.
2-Methylnaphthalene	40	1,280.
Naphthalene	40	1,090.
Phenanthrene	40	52.0
Pyrene	40	ND

NUMBER OF UNIDENTIFIED PEAKS: >10

Analytical Surrogate Recovery:

Nitrobenzene-d 5:	75.0%
2-Fluorobiphenyl:	80.0%
Terphenyl-d 14:	80.0%

NOTES:

- 1 Detection limit increased due to high levels of non-target contaminants.
- 2 None detected

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CHAIN-OF-CUSTODY RECORD

22971

Project Name: SWEET + BURT / MORRISVILLE	Reporting Address: HAN	Billing Address: HAN
Site Location: MORRISVILLE, VT		# 77030
Endyne Project Number: HNSB/651	Company: HAN	Sampler Name: ES
	Contact Name/Phone #: ERIC SWICK	Phone #: 655-0820

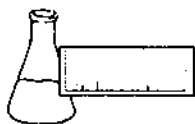
[illegible]

Relinquished by: Signature <i>E. J. Smith</i>	Received by: Signature <i>James H. [unclear]</i>	Date/Time <i>12/5/97 8:00am</i>
Relinquished by: Signature	Received by: Signature	Date/Time

New York State Project: Yes No

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										



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REPORT OF LABORATORY ANALYSIS

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
DATE REPORTED: January 8, 1998
DATE SAMPLED: December 19, 1997

PROJECT CODE: HNSB1769
REF. #: 114,845 - 114,847

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody did not indicate sample preservation.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

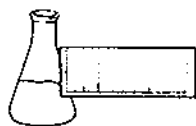
Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate data was determined to be within Laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures



ENDYNE, INC.

Laboratory Services

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LABORATORY REPORT
PAH'S BY EPA METHOD 8270

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
REPORT DATE: January 8, 1998
DATE SAMPLED: December 19, 1997
DATE RECEIVED: Not Indicated
DATE EXTRACTED: December 22, 1997

PROJECT CODE: HNSB1769
ANALYSIS DATE: December 31, 1997
STATION: Bdrk-1
REF. #: 114,845
TIME SAMPLED: Not Indicated
SAMPLER: E.S.

<u>Parameter</u>	<u>Quantitation</u> <u>Limit (ug/L)</u>	<u>Concentration</u> <u>(ug/L)</u>
Acenaphthene	2	ND ¹
Acenaphthylene	2	ND
Anthracene	2	ND
Benzo(a)anthracene	2	ND
Benzo(b&k)fluoranthene	2	ND
Benzo(a)pyrene	2	ND
Benzo(ghi)perylene	2	ND
Chrysene	2	ND
Dibenzo(a,h)anthracene	2	ND
Fluoranthene	2	ND
Fluorene	2	TBQ ²
Indeno(1,2,3-cd)pyrene	2	ND
1-Methylnaphthalene	2	31.7
2-Methylnaphthalene	2	56.2
Naphthalene	2	64.5
Phenanthrene	2	TBQ
Pyrene	2	ND

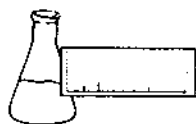
NUMBER OF UNIDENTIFIED PEAKS: >10

Analytical Surrogate Recovery:

Nitrobenzene-d 5:	77.%
2-Fluorobiphenyl:	78.%
Terphenyl-d 14:	87.%

NOTES:

- 1 None detected
- 2 Trace below quantitation limit



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LABORATORY REPORT
PAH'S BY EPA METHOD 8270

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
REPORT DATE: January 8, 1998
DATE SAMPLED: December 19, 1997
DATE RECEIVED: Not Indicated
DATE EXTRACTED: December 22, 1997

PROJECT CODE: HNSB1769
ANALYSIS DATE: December 31, 1997
STATION: Seep-1
REF. #: 114,846
TIME SAMPLED: Not Indicated
SAMPLER: E.S.

<u>Parameter</u>	<u>Quantitation</u> <u>Limit (ug/L)</u>	<u>Concentration</u> <u>(ug/L)</u>
Acenaphthene	2	ND ¹
Acenaphthylene	2	ND
Anthracene	2	ND
Benzo(a)anthracene	2	ND
Benzo(b&k)fluoranthene	2	ND
Benzo(a)pyrene	2	ND
Benzo(ghi)perylene	2	ND
Chrysene	2	ND
Dibenzo(a,h)anthracene	2	ND
Fluoranthene	2	ND
Fluorene	2	ND
Indeno(1,2,3-cd)pyrene	2	ND
1-Methylnaphthalene	2	ND
2-Methylnaphthalene	2	ND
Naphthalene	2	ND
Phenanthrene	2	ND
Pyrene	2	ND

NUMBER OF UNIDENTIFIED PEAKS: 0

Analytical Surrogate Recovery:

Nitrobenzene-d 5:	75.%
2-Fluorobiphenyl:	76.%
Terphenyl-d 14:	93.%

NOTES:

1 None detected



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LABORATORY REPORT
PAH'S BY EPA METHOD 8270

CLIENT: Heindel and Noyes
PROJECT NAME: Sweet & Burt
REPORT DATE: January 8, 1998
DATE SAMPLED: December 19, 1997
DATE RECEIVED: Not Indicated
DATE EXTRACTED: December 22, 1997

PROJECT CODE: HNSB1769
ANALYSIS DATE: December 31, 1997
STATION: Seep-2
REF. #: 114,847
TIME SAMPLED: Not Indicated
SAMPLER: E.S.

<u>Parameter</u>	<u>Quantitation</u> <u>Limit (ug/L)</u>	<u>Concentration</u> <u>(ug/L)</u>
Acenaphthene	2	ND ¹
Acenaphthylene	2	ND
Anthracene	2	ND
Benzo(a)anthracene	2	ND
Benzo(b&k)fluoranthene	2	ND
Benzo(a)pyrene	2	ND
Benzo(ghi)perylene	2	ND
Chrysene	2	ND
Dibenzo(a,h)anthracene	2	ND
Fluoranthene	2	ND
Fluorene	2	ND
Indeno(1,2,3-cd)pyrene	2	ND
1-Methylnaphthalene	2	ND
2-Methylnaphthalene	2	ND
Naphthalene	2	ND
Phenanthrene	2	ND
Pyrene	2	ND

NUMBER OF UNIDENTIFIED PEAKS: 0

Analytical Surrogate Recovery:

Nitrobenzene-d 5:	81.%
2-Fluorobiphenyl:	75.%
Terphenyl-d 14:	98.%

NOTES:

1 None detected

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pests/PCB
4	Nitrite N	9	BOD ₅	14	Turbidity	19	BTEX	24	EPA 608 Pests/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify)										